
sate transit

The Right Start for Your New Product: Gaylord Boxes for Safe Shipment

It's an exciting moment in any factory — that moment when the new product is ready for launching.

So good to know at this time that the product is starting out right in containers which guard against damage down the line. Developed with the same care as you give your product, Gaylord Boxes combine proved design with quality board to give you superior protection.

You owe it to yourself—and to your products, new or old—to investigate Gaylord Boxes. Call your nearby sales office.

GAYLORD CONTAINER CORPORATION — Gaylord Boxes — General Offices: ST. LOUIS, MISSOURI

SALES OFFICES — COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

ST-2

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and metal products manufacturing field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

CONTENTS

CUSTOM DESIGNED

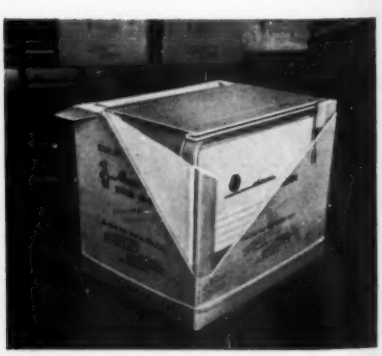
HEAVY-DUTY SHIPPING CONTAINERS FOR

The lift truck inserts the lifting flange under one side of cap and pulls up. The strong construction enables sure, fast lifting and close stacking without usual jostling.

MAGIC CHEF
HOME HEATERS

International packaging specialists designed a new efficient shipping container for Magic Chef, using their tube and cap construction. Here are its outstanding advantages:

1. ***Easier handling.*** **A lift truck approaches the container from any side and lifts from one to four at a time and places them in a stack without jostling due to cap construction. (See drawing.)**
2. **Stacks seven high without pallets.**
3. **Customer receives range factory fresh because of dustproof construction.**
4. **Eliminates uncrating hazards — no wooden skids — no nails. You need no hammers or pinch-bars.**
5. **Large clean surfaces give ample room for identification of contents and for advertising.**
6. **This custom designed heavy-duty shipping container is approved by the Consolidated and Uniform Freight Classification Committee for rail shipment.**



May we give you more information about this and other package designs. Write to any of the manufacturing plants listed below—

International Paper company

CONTAINER DIVISION

220 East 42nd Street, New York 17, N. Y.

Los Angeles 54, Cal.	Kansas City 3, Kan.	Somerville 45, Mass.	Wooster, Ohio	Springhill, La.
Georgetown, S. C.	St. Louis 11, Mo.	Chicago 38, Ill.	Whippany, N. J.	Manchester, N. H.

ST-4

How printed forms help Carrier reduce loss and damage

by C. H. Colyer • ASSISTANT TRAFFIC MANAGER, CARRIER CORPORATION, SYRACUSE, N. Y.

OUR customers remain loyal so long as we keep them happy, but there is probably no faster way to influence a change in source of supply than for a shipper to neglect his packaging responsibility. There is certainly no quicker way for a carrier to influence a change in mode of transportation than abuse and mishandling of the freight which has been entrusted to his custody.

The first is by the pre-shipment testing of packages and products in order to determine the most practical, most economical, and the most protective method to employ so that the maximum of protection will assure safe transit under conditions which generally are in excess of what would be considered normal transportation handling. In this respect, the program which is advocated by the National Safe Transit Committee is indicative of the importance and the need for precautionary measures to prevent damage.

We believe that a new form which we at Carrier have recently adopted constitutes a more direct approach to the loss and damage problem, as it has already proven to be an invaluable tool. *Its purpose is threefold.*

First, it promotes better customer relations because in soliciting his cooperation in preventing loss and damage, we have convinced our customer that our concern for his shipment does not cease at our shipping dock.

Second, the pertinent information requested provides us with an intelligent means of analyzing the conditions, nature, and extent of damage, making it possible for us to more readily determine the cause and take corrective steps to prevent its repetition. It helps us to properly place the responsibility. It assists in more readily effecting disposition of the merchandise involved. →

This form is attached to the packing list accompanying each shipment. The consignee fills in the report, and returns it to the traffic department.

Carrier **IMPORTANT**

WE SOLICIT YOUR COOPERATION IN LOSS AND DAMAGE PREVENTION

Was This Shipment Received in Good Condition?

If not you can help us prevent Loss And Or Damage in future shipments by completing the following questionnaire and returning to our Traffic Department, 300 South Geddes St., Syracuse, New York.

Is damage visible ( ) Concealed ( )

Did load shift	( ) Yes	( ) No
Was Bracing Broken	( ) Yes	( ) No
Was Bracing Loose	( ) Yes	( ) No
Was Steel Strap Broken	( ) Yes	( ) No

LOCATION OF DAMAGE (USE DIAGRAM ON REVERSE SIDE)

Were damaged units in ends of car or truck	( )
Were damaged units along side wall	( )
Were damaged units in doorway	( )
Were damaged units on top of load	( )
Were damaged units on floor	( )

APPARENT CAUSE OF DAMAGE

Protruding nails or cleats	( )
Anchor Plates	( )
Loose or broken side walls	( )
Loose or broken floor	( )
Leaky doors or roof	( )
Improper loading	( )
Improper blocking	( )
Rough handling	( )
Mechanical material handling equipment	( )

TYPE AND CONDITION OF DAMAGED CONTAINERS

	Corrugated Boxes	Plywood Crts.	Skids	Wooden Boxes	Other
Broken					
Creased					
Crushed					
Punctured					
Recoopered					
Torn					
Wet					

EXTENT OF DAMAGE AND SERIAL NUMBERS OF UNITS INVOLVED

Did you request inspection by the delivering carrier	( )
Did you notify common carrier in writing of your intent to file claim	( )
Did you photograph damage condition before handling	( )

Signed .....

Third, it serves to remind the consignee of the procedure which he must follow to protect his interest and support his subsequent claim should it become necessary to file one. It encourages more prompt inspection by the delivering carrier, as it brings to the attention of the consignee the need to request that inspection be made.

This form is attached to the packing list which accompanies each and every shipment, large or small. Thereby, it is immediately available at the time loss or damage is determined.

On occasion, it has proven embarrassing to us. In one instance, it revealed damage had been inflicted by the forks of a power truck, apparently before shipment, but that is the purpose of this form—to establish the cause of damage and then correct it.

Conclusion

It is my sincere belief that during the year 1954, freight loss and damage suffered by shippers, receivers, and carriers will be appreciably less than in recent years.

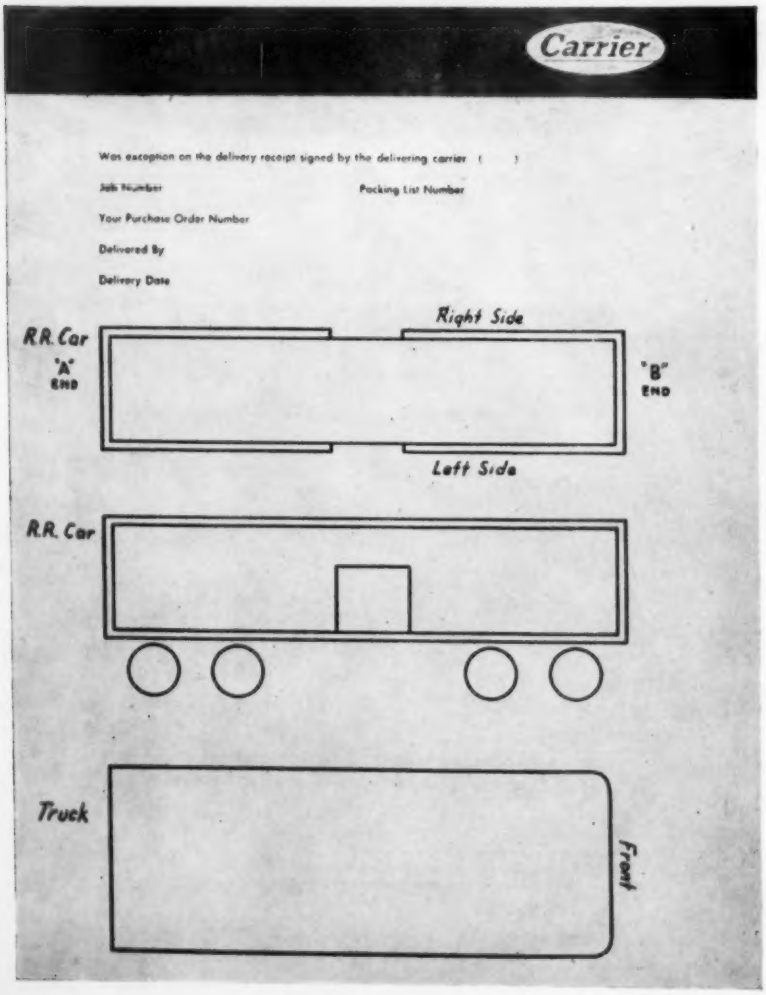
Possibly, it will be the result of increased cooperation as demonstrated by the large attendance of shippers and carriers at this council meeting.

Possibly, it will be the result of increased preventive activity or intensified educational programs.

Most certainly, it will be the result of the realization that our economy can no longer bear this wasteful burden.

Although a great deal of progress has been made, I regret to say that there is still great room for improvement. This will be accomplished only when you as an industry and we as a user of your industry, cooperate with each other.

If damage is found in shipment, the consignee uses this back side of questionnaire form to locate where damage occurred in boxcar or truck.



ST-6

SHANDS REJOINS NST TECHNICAL PLANNING DIV.

Paul W. Bush, chairman of the Technical Planning Division of the National Safe Transit Committee, has announced the addition of E. H. Shands, of the O. Hommel Co., Pittsburgh, to the division.

Shands rejoins the division after an absence of two years. As a representative of the Geo. D. Roper Corp., Rockford, Ill., he was one of the small band of industry men who pioneered the way for the National Safe Transit Program. He headed the Committee's technical planning operations during its early organization period, and worked closely with the NST Committee during the correlation work and development of the Safe Transit Test Procedures.

In making the announcement, Bush said that the Committee was particularly pleased to have Shands working with the Technical Planning Division at this time.

"The months ahead," he stated, "will be especially busy ones for the Division. Our program of research goes forward, and we are presently at work on a project which will reveal the differences in various conbur equipment. We are also hard at work on other projects that include the completion of a new Safe Transit film. The specialized knowledge and skills that Mr. Shands brings to the Technical Planning Division will help us to move even more rapidly toward our goal of reducing in-transit damages to an absolute minimum."

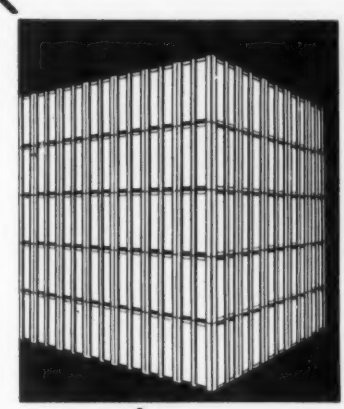
INTL. PAPER TO BUILD BOX PLANT IN NEW YORK

Plans for the construction of a plant in Geneva, N. Y., designed to produce shipping containers for industry in northern and western New York has been announced by W. S. Snyder, manager, container division, International Paper Company.

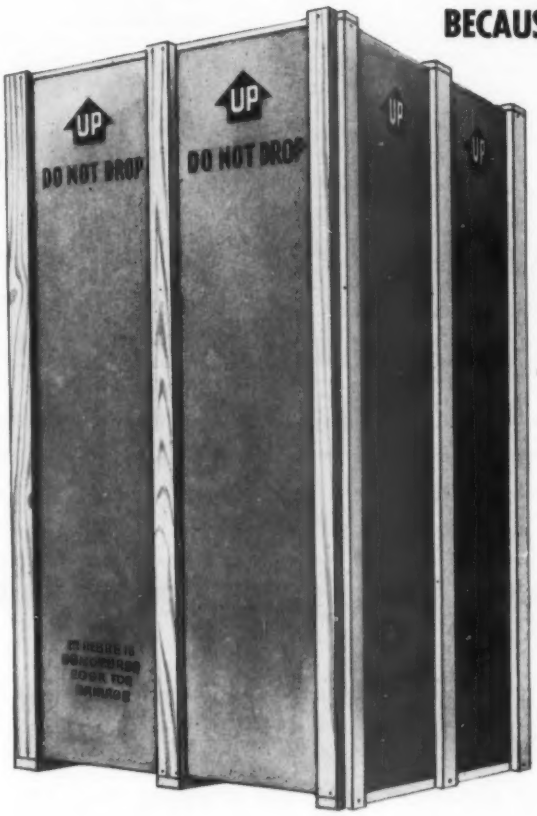
Montague Mead has been named manager of the new plant.

KIECKHEFER MILWAUKEE

WATKINS CONTAINERS ARE BETTER



BECAUSE.....



Producers of economical product protection for "around the corner or across the nation". Service includes Pallets, Kieckhefer Paletboxes, Industrial Lumber and specially-designed special-purpose containers.

You receive faster service and better quality as all components are manufactured complete on modern equipment in our own plants.

Cleats are permanently attached to the corrugated board with moisture resistant glue—*under pressure of hydraulic equipment* resulting in smooth interiors with no obstructions to damage the fine finished products.

The tube corners are stapled on automatic equipment insuring close evenly spaced stitches and are additionally reinforced with a special cement.

Skid bases are manufactured for strength. The parts are accurately assembled on new modern nailing equipment. All mounting holes are drilled simultaneously on special equipment insuring absolute accuracy.

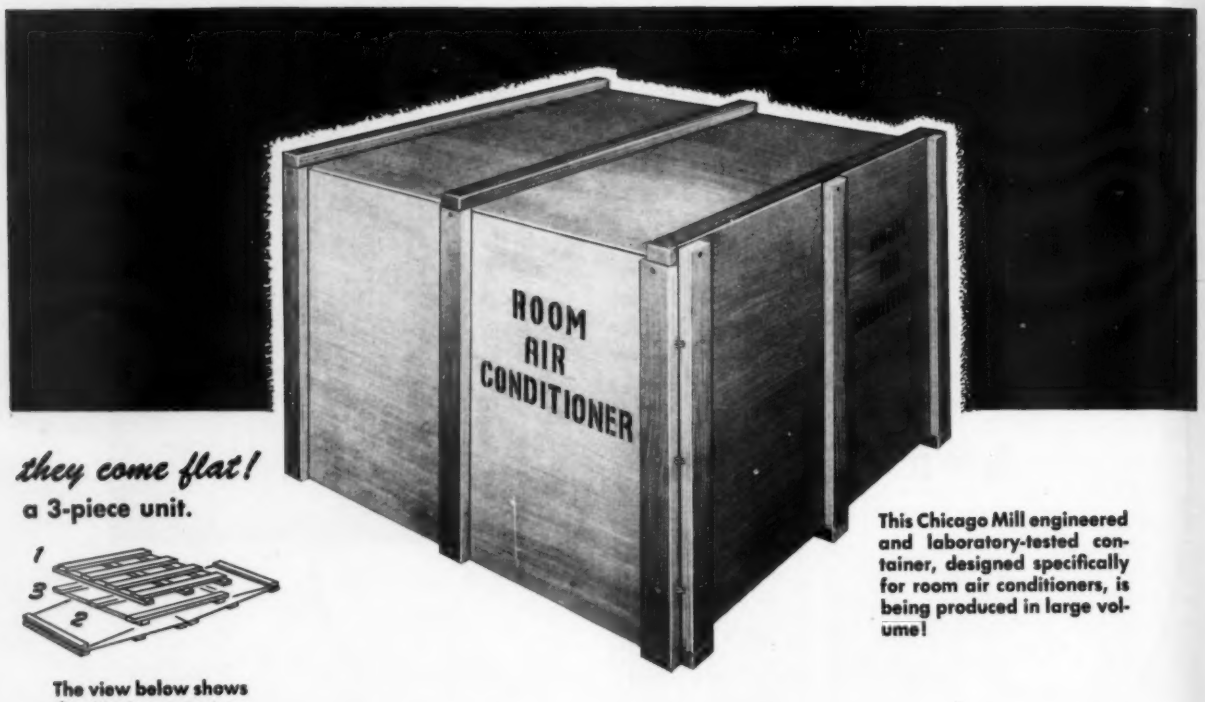
Whether your current problem is fragile neon signs, industrial equipment or finished products in volume production—check Kieckhefer-Milwaukee for a practical, economical solution.

PACKAGING ENGINEERS KIECKHEFER MILWAUKEE FOR FIFTY YEARS

KIECKHEFER BOX AND LUMBER CO.

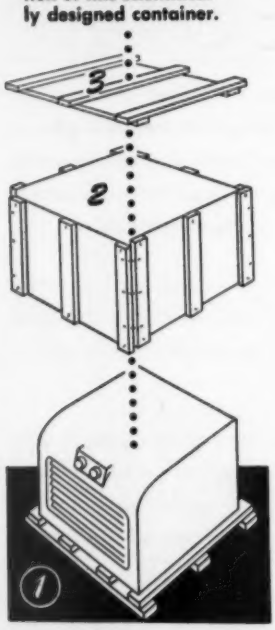
• WOODEN BOXES • BOX SHOOKS • CRATES • CLEATED FIBRE SHIPPING CONTAINERS •

1715 WEST CANAL STREET, MILWAUKEE 3, WIS.



they come flat!
a 3-piece unit.

The view below shows the 3-piece construction of this scientifically designed container.



This Chicago Mill engineered and laboratory-tested container, designed specifically for room air conditioners, is being produced in large volume!

here's the *most practical* container for shipping room air conditioners!

In order to meet the requirements of the growing air conditioning industry, Chicago Mill had its engineers design the best possible container for the protection and shipment of room air conditioners. The hinged corner plywood container that was developed offers these advantages:

- Maximum protection
- Low cost
- Fast assembly
- You can stack them 20 high for compact storage with a good factor of safety

Contact your Chicago Mill representative for complete information.

A shipping container for every shipping purpose

FOR SAFER TRANSIT BY • TRUCK • BOAT • TRAIN • PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — Chicago 3, Illinois

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

In-process stock signs, awaiting customer's order before application of proper insignia, are stored in pigeon-holed racks. Out-of-the-way location of racks prevents accidental damage to stored signs.

Handling, packing and shipping enameled signs

illustrated with finishfotos

by Gilbert C. Close • WESTERN EDITOR

Exclusive feature
safe transit

A trip through Cameo's (short for California Metal Enameling Co.) Los Angeles, California plant, and a cross-country auto trip have one thing in common — you'll see a lot of signs along the way. In fact, any auto trip through California is in a way Cameo-conducted, for Cameo-produced signs tell you where to go, how to drive, and when to stop. They tell you what to buy, and warn you of hidden dangers along the day.

Under the circumstances, this is a normal occurrence, for Cameo has been producing porcelain enameled signs since 1911. Millions of these signs have been produced for private industry, more millions for the California State Highway Department. And a lot of signs can pass through an enameling furnace in 43 years!

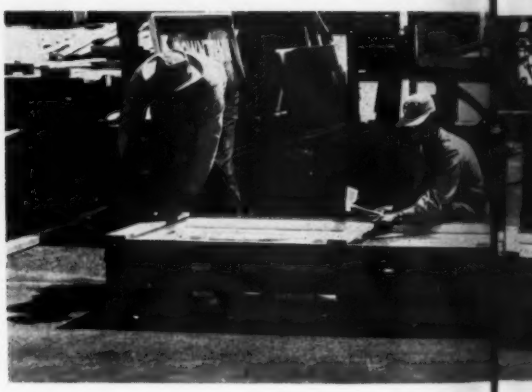
During that 43-year period, Cameo personnel have learned a lot about

to Page ST-12 →

turn page for special applications

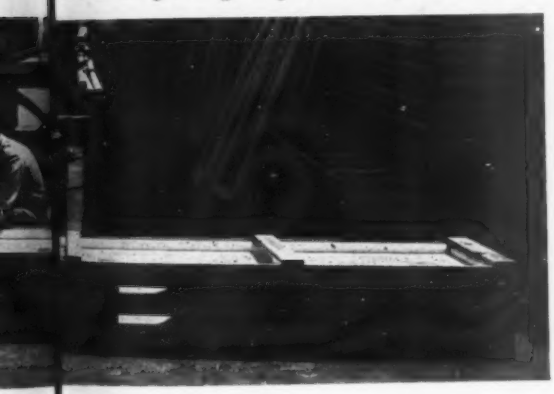
Cameo shipping department employees place porcelain enameled state highway signs in a state-furnished palletized shipping crate.

Above: This large and "roomy" shipping dock, constr at truck-bed height, simplifies loading problem



Stock signs for st customers are enam crated and stored p to receiving the ord Pre-crating avoids minute rush handl and provides protec during the storage p iod. This is one co of the Cameo wareho

: This crate for huge framed signs utilizes the sign rame as integral stiffening member of the crate.



Round commercial signs being packed in a rigid crate. Interleaving paper permits some "give" to prevent damage from sudden shocks.

her corner of the eo shipping depart- t. Ready-to-go signs cked along the wall awaiting crating and shipment.

ish OCTOBER • 1954

Handling and packaging enameled signs

(Continued from Page ST-9)

handling, packing and shipping porcelain enameled signs so that they are not marred, bent, or damaged. Today these same sign-handling techniques are being applied to the porcelain enameled architectural panels which are pouring in mushrooming quantities from the Cameo shops.

You can't walk through the shops, point out a single facet of operations, or even a series of operations, and say, "This is why the signs arrived in an undamaged condition at their destination." To do so would be taking too much for granted. You'd be skipping a lot of little things along the way, for safe handling is ingrained in every department, and in every operation from the time raw metal enters the shop until the signs or panels are loaded for delivery.

For instance, there are those rigidly built, properly sized, pigeon-holed racks constructed in out-of-the-way locations, where in-process partially finished signs are stored until some customer order specifies the proper insignia to apply just prior to shipment. While stored in these racks, there is no danger that the signs will be bumped, shoved around, nudged by a transportation truck, or have something dropped on them.

Then there is the practice of crating all large stock signs just as soon as they are finished and storing them away in these crates. Short of an accident of some type, there is no possibility that these crated signs will become damaged during storage. Many of the larger signs are framed prior to shipment, then crated in a manner to use this frame as an integral part of the shipping container.

Both "stock" signs and "specialty" items

Years of experience have evolved safe crating methods and safe packing techniques for quantity shipments of stock sign sizes, yet these standardized techniques are not allowed to interfere in the packing and crating of specialty items. Each of these is recognized as a problem in itself and handled accordingly. The day this writer toured the Cameo plant, the foreman of the packing department was hand-building a small but intricate crate for shipping a specially enameled wall furnace grating.

All crates are designed and sized so that the contents cannot move bodily in any direction. But at the same time, by proper interleaving with packing material, and by proper spacing, the panel and sign sections can give slightly, thus avoiding damage from sudden shock.

As a final tribute to safe handling methods, a new plant addition incorporates a long, commodious and roofed loading dock, constructed at truck bed height. There is no lifting or lowering of crated signs and panels during loading. There is plenty of space on the dock to stockpile outgoing orders, with ample space left over for interim traffic.

The photographs with this article

provide a "look" at some of Cameo's handling, packing and shipping techniques. Those in the "know", those with long experience in handling porcelain enameled products, will see much more than these photographs actually show. For behind each lies planning and preparation, and, not to be overlooked, some 43 years of experience.

CERTIFY G.E, McGRAW DIV., SEPCO, ROYAL TYPEWRITER, RUDD, AMERICA & SOUTHERN, CONSOLIDATED INDUSTRIES

Latest certifications of firms participating in the National Safe Transit Program include:

General Electric Co., Bloomfield, N. J.; Line Material Co., Div. of McGraw Electric Co., Milwaukee, Wis.; Sepco Corp., Pottstown, Pa.; Royal Typewriter Co., Hartford, Conn., Ruud Manufacturing Co., Kalamazoo, Mich.; America & Southern Corp., Nashville, Tenn.; and Consolidated Industries, Inc., Lafayette, Ind.

CERTIFY HIGHLAND BOX

The latest laboratory to be certified by the National Safe Transit Comittee is Highland Box Co., Highland, Ill.

GEN. BOX UPS REGAN, KEENE

Thomas W. Regan has been appointed sales manager of General Box Co., it was announced by J. A. Cragwall, president and general manager.

A company vice president since 1949, Regan has been manager of the firm's Winchendon, Mass., operation. He will headquarter at the firm's executive offices in Des Plaines, Ill.

C. E. Keene has been appointed manager of the Winchendon plant.

C. E. KEENE

T. W. REGAN

ADVERTISERS' INDEX

Customer Service YORK ST. AT PARK AVE., ELMHURST, ILLINOIS

"I saw your ad in finish"

SAFE TRANSIT MEETING IN GRAND RAPIDS

A. B. Wood, a Westinghouse Electric Supply Co. branch manager at Grand Rapids, Mich., is credited with the enthusiastic support of the recent National Safe Transit meeting held at Grand Rapids, Mich.

A descriptive presentation at the program was presented by J. K. Linsenmayer of the Westinghouse Columbus plant, a man who is thoroughly familiar with the program.

An attendance of 75 carrier representatives was reported, including the following companies: Associated Truck Lines; Parker Motor Freight, Inc.; Hooker Motor Freight; Michigan Express, Inc.; Interstate Motor Freight System; Darling Freight, Inc.; Creston Transfer Co.; Grand Trunk Railroad; Berkey & Gay Terminal, Inc.; and the Grand Rapids Chamber of Commerce.

The program consisted of a general outline of the NST program, followed by the Safe Transit sound slide film, and then by the Southern Railway film which typifies the intense interest of the railroads in attempting to do their part on the "two-way street."

Even whirling roller skates won't mar the beauty of PORCELAIN ENAMEL

Years of hard service can't equal a test like this. It shows that *porcelain enamel* stands up to the toughest wear—and still stays bright and beautiful.

If you want to give *your* products extra sales advantages that stand out in comparison with other finishes, make them of Armco Enameling Iron and attach a label bearing the widely-known Armco triangle trademark.

LIFETIME FINISH

The combination of Armco Enameling Iron and fused-on minerals offers a *lifetime* finish. The handsome surface is not affected by time, rust and many other destructive elements. Acid resisting porcelain enamel is not damaged by fruit juices, alcohol or mild household cleansers.

There are no tiny surface pores in Porcelain Enamel to collect dirt and moisture. So stains and dirt are easy to wipe off. Colors never "fade out" even after years of service.

THE "WORLD'S STANDARD"

Armco Enameling Iron—produced for more than 40 years—is known as the "World's Standard." It possesses excellent fabricating properties that are *uniform from one shipment to the next.* Enamelers know what to expect. They consistently report a higher percentage of primes and fewer rejects with Armco Enameling Iron.

We'll be glad to send you complete information. Just write us at the address below.

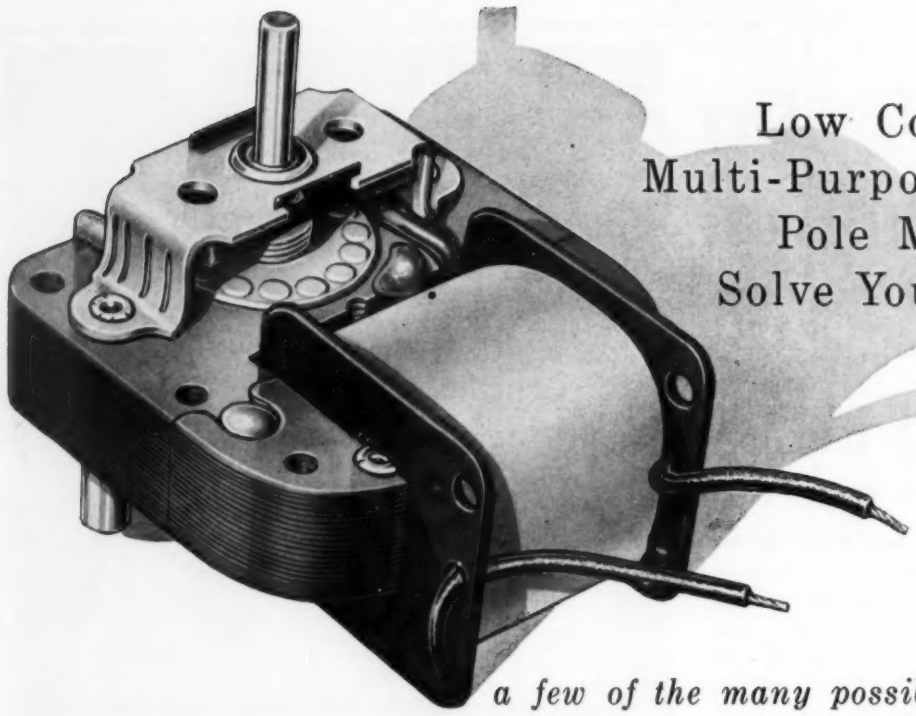
Spinning skates fail to scratch or damage this porcelain enameled kitchen counter top. Underneath the lifetime finish is a special metal base—Armco Enameling Iron.

ARMCO STEEL CORPORATION

4594 CURTIS STREET, MIDDLETOWN, OHIO

ARMCO®

SHEFFIELD STEEL • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION



Low Cost, Soreng Multi-Purpose Shaded-Pole Motors May Solve Your Problem

a few of the many possible applications

SPECIFICATIONS ON OUR TWELVE MODELS

MODEL NO. ASSEMBLY NO.	400-10-1 4006246	400-11-1 4006247	400-20-1 4006131	400-21-1 4006132	400-30-1 4006256	400-31-1 4006257	400-40-1 4006266	400-41-1 4006267	400-50-1 4006276	400-51-1 4006277	400-60-1 4006286	400-61-1 4006287
VOLTS	115	115	115	115	115	115	115	115	115	115	115	115
FREQUENCY	60	60	60	60	60	60	60	60	60	60	60	60
AMPERE-NO LOAD	0.31	0.31	0.42	0.42	0.55	0.55	0.64	0.64	0.97	0.97	1.31	1.31
WATTS—NO LOAD	13.5	13.5	19	19	24	24	27.7	27.7	40	40	53	53
RPM—NO LOAD	3400	3400	3480	3480	3500	3500	3570	3570	3560	3560	3550	3550
MAX. HP OUTPUT	1/600	1/600	1/200	1/200	1/125	1/125	1/75	1/75	1/50	1/50	1/40	1/40
START TORQUE-OZ. IN.	0.58	0.58	1.4	1.4	2.3	2.3	2.3	2.3	3.3	3.3	4.9	4.9
STALLED WATTS	18	18	29	29	40	40	45	45	68	68	98	98
EFFICIENCY %	9	9	16	16	19	19	23	23	23	23	23	23
ROTATION SHAFT END	C.W.	C.C.W.	C.W.	C.C.W.	C.W.	C.C.W.	C.W.	C.C.W.	C.W.	C.C.W.	C.W.	C.C.W.
TURNS PER COIL	1700	1700	1200	1200	970	970	825	825	630	630	475	475
COIL WIRE A.W.G.	30	30	28	28	26	26	26	26	25	25	23	23
STACK WIDTH "A"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	⅜"	1⅛"	1⅛"	1½"	1½"
SPACER LOCATION	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.
SHAFT DIA. "B"	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.182	0.2178	0.2178	0.2178	0.2178
SHAFT EXT. TO BEARING	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
WEIGHT—POUNDS	0.8	0.8	1.16	1.16	1.44	1.44	1.62	1.62	1.90	1.90	2.38	2.38
SERVICE DUTY	CON'T	CON'T	CON'T	CON'T	CON'T	CON'T	CON'T	CON'T	CON'T	CON'T	CON'T	CON'T
ES—SHEET	10060	10060	10060	10060	10060	10060	10060	10060	10060	10060	10060	10060
CUSTOMER	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.	STD.

Phonograph Turntable Motor. Models available for three-speed, single, double or automatic operation.

Light Power Tools. Jig saws, drills, etc.

Various Small Fans

Home Movie Projectors

SORENG

PRODUCTS CORPORATION

9559 Soreng Avenue, Schiller Park, Illinois

Plants: Schiller Park, Ill. • Fremont, Ohio • Spring Valley, Ill.

Complimentary Engineering Counsel

If you believe you have a possible application for one of our shaded-pole motors, please feel free to consult with us without obligation. Our engineers will work with you and advise you on the practicality of using one of our motors.

OTHER SORENG PRODUCTS FOR THE APPLIANCE, AUTOMOTIVE AND AIRCRAFT INDUSTRIES

Solenoid

Selector Switch

Timer

Snap Switch

Push-button Switch

Door Switch

Solenoid Valve

November • 1954

VOL. 11 • NO. 11

FEATURES

MISCELLANEOUS

finish

MONTHLY TRADE PUBLICATION
Established January 1944
Published by
DANA CHASE PUBLICATIONS
York Street at Park Avenue
Elmhurst, Illinois
Telephone • TErrace 4-5280
TErrace 4-5281

•

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. Includes technical and practical information on plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on fabrication, metal preparation, metal finishing, assembly, and packaging and shipping.

Free controlled circulation to management, purchasing, engineering and key plant personnel in metal product manufacturing plants. To others, subscription price is $5.00 per year, domestic. To all other countries $8.00 per year (U.S. funds).

Editor and publisher • DANA CHASE
Associate editor • MATT E. HEUERTZ
Associate technical editor • J. L. McLAUGHLIN
Western editor • GILBERT C. CLOSE
Editor's assistant • R. W. RICHTER
Customer service • DANA CHASE, JR.
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Technical consultants
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PROF. R. M. KING
PROF. L. L. CARRICK
JAMES M. LEAKE
RALPH F. BISBEE

Accepted under the act of June 5, 1934, at Aurora, Illinois, authorized January 7, 1948.

BPA NBP

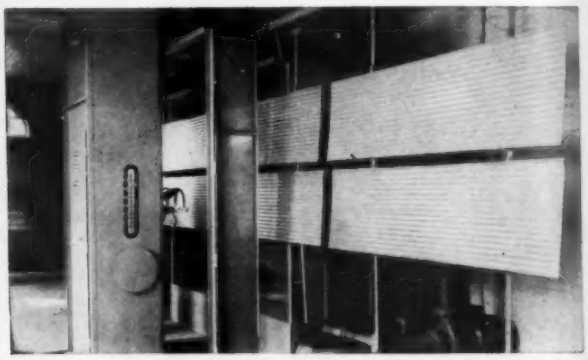
finish

METAL PRODUCTS MANUFACTURING
FROM RAW METAL TO FINISHED PRODUCT

Is automatic painting your next step to lower production costs?

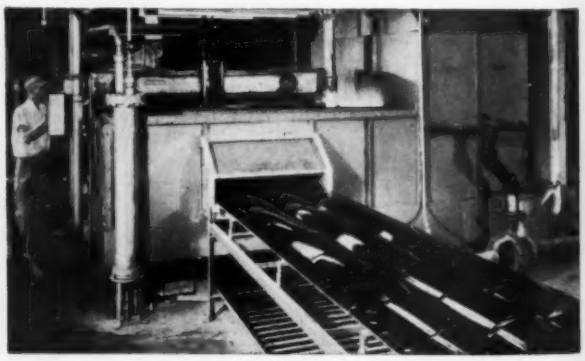
DeVilbiss Automatic Spray Machines cut finishing costs as much as 2/3 and reduce rejects to a negligible number for manufacturers of household appliances, building materials, industrial equipment, soft goods and thousands of other mass-produced items.

Vacuum cleaner housings like these are typical of the parts that can be finished automatically at rates from 540 to 4320 pieces per hour on DeVilbiss Chain-on-Edge Machines.



Parts traveling on overhead conveyors, such as these panels, can be quickly coated both front and back with any material on DeVilbiss Automatic Vertical Transverse Machines.

DeVilbiss Automatic Rotary Machines spray a great variety of industrial products economically and quickly, with absolute uniformity. The operator need only load and unload the table conveyor.



Coating speeds from 3,000 to 14,000 square feet per hour are possible with DeVilbiss Automatic Horizontal Transverse Machines. Here, carpet-sweeper tops emerge with a gleaming finish.

How about *your* company? Is there a job out in the shop that could benefit from the high speed, the smooth, uniform finishes DeVilbiss Automatic spray-painting equipment brings about? Whether you're working with flat objects, parts traveling on overhead conveyors or parts that require both inner and outer coatings, you'll find DeVilbiss has a wide variety of standardized automatic machines to serve you. Call your local DeVilbiss representative for full details.

THE DEVILBISS COMPANY, Toledo, Ohio

Barrie, Ontario • London, England • Santa Clara, Calif.

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EPON® RESIN does it!

a tougher, more corrosion-resistant primer for metal lawn furniture . . . *at lower cost*

New Epon primer, formulated by The Glidden Company, Cleveland, is the key to a better finish on metal lawn furniture.

HERE'S HOW...

EXPOSED to blistering sunlight, rain, and often to corrosive salt sea breezes—lawn furniture must have a tough, corrosion-resistant finish.

For this reason, the Troy Sunshade Company has set high standards of durability and appearance for finishes on its quality metal lawn furniture. When metal shortages made it necessary to abandon chrome plating, Troy engineers made a careful study of paints and paint-finishing methods. Tests showed that the *primer* coat was the key to paint durability . . . *and that an Epon resin-based primer gave improved appearance and the highest degree of resistance to corrosion.*

The Epon resin-based primer is applied by rotary spray coating. The finish coat is applied by electrostatic spraying. Both operations are completely conveyorized. Thanks to the excellent adhesion and leveling properties of the Epon primer, expensive sanding operations are reduced to a minimum. Troy engineers estimate that the new finishing system saves as much as a dollar a gallon on materials, in addition to savings in labor costs.

• • •

Call on our sales offices for names of suppliers who sell Epon resin coatings. Write for the full Epon coatings story in the new brochure, "Planning to Paint a Pyramid?"

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Each year more and more porcelain enameling plants are learning how to make their dollar stretch when it comes to buying frit.

You stretch one way by saving on the original purchase price and you stretch another through more efficient plant operation.

You too can make these savings with Century *time proved* frits, frits that are tops for adding beauty and durability to your finished metal product.

If you haven't tried Century frit give us a ring right now — and stretch that dollar now!

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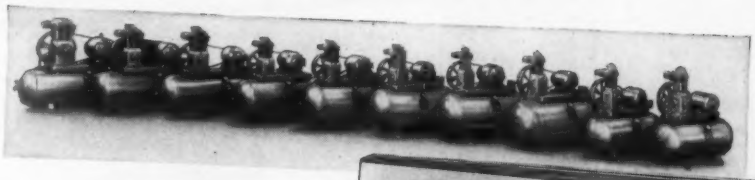
FRIT MASTERS

CENTURY VITREOUS ENAMEL COMPANY

• 6641-61 S. Narragansett Ave., Chicago 38, Ill. •

NOW... A BINKS AIR COMPRESSOR for every industrial use!

Name your air compressor needs. Whatever they are, we have a unit that will match your requirements. Choose from this *complete performance-proved line*—5 types—practically any size or capacity. Now you can have the proper air compressor—*right* in performance, dependability and price.



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IT'S FREE! Get the complete story of Binks performance-proved air compressors

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Single or two-stage units, tank-mounted in sizes from ¼ H.P. to 15 H.P....also, single and two-stage base-mounted types from ¼ H.P. to 20 H.P....and portable single-stage units in capacities of from 2.2 CFM to 105 CFM.

FEATURES

Oversized *Timken* tapered roller main bearings, lightweight automotive-type rods and pistons, high-efficiency valves, quiet operation, *completely loadless starting*, constant level oiling, larger cooling surface and other long-service features.

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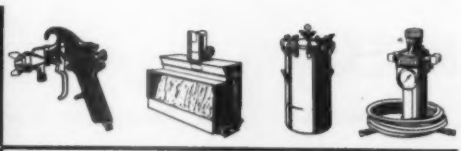
EVERYTHING FOR SPRAY PAINTING



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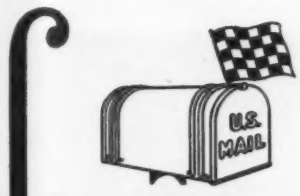


finish SUGGESTION BOX

New fabricating technique offers refrigeration engineers wider design latitude in coils

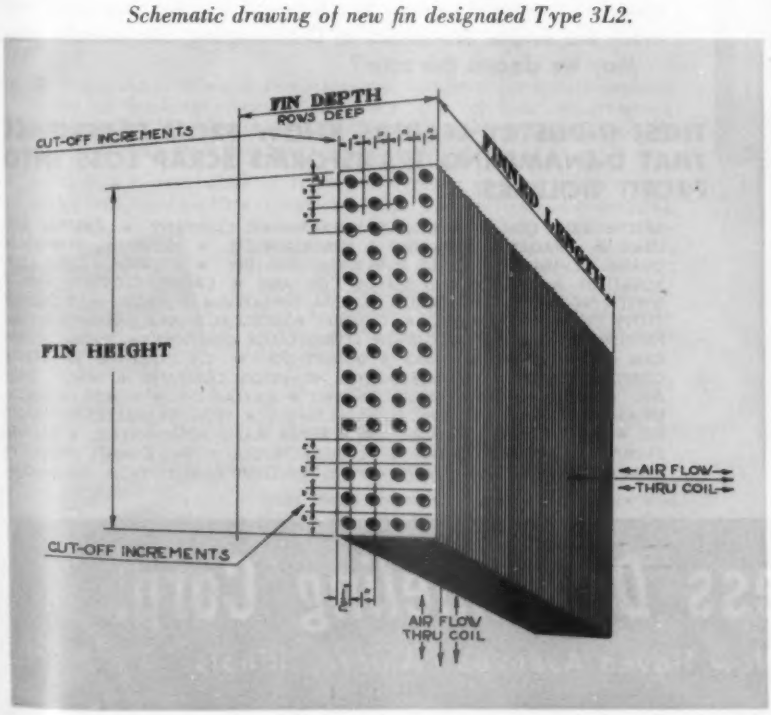
A NEW type die for refrigeration coils offers an in-line pattern of the economical ⅜-inch o.d. copper tube on 1-inch centers with a choice of 5, 6, 7, or 8 fins per inch.

At any of these automatic spacings, the collar of the .010 aluminum fin completely covers the tubing. The one-piece fin can be obtained in increments of one inch in height and width with a maximum of 15 inches for one dimension, while the other dimension, as well as coil length, is unlimited.

This is reported to be the first use of this type die and the applications of this fabricating technique for the production of refrigeration coils.

Source for more information on this new type die for refrigeration coils may be obtained by writing to finish.

Schematic drawing of new fin designated Type 3L2.



SUNROC PURCHASES WHITE MFG.

Sunroc Company, Glen Riddle, Pa., has purchased the White Mfg. Co., of Toledo. Cream and hot butter dispensers, two of White's products, will be produced in Glen Riddle by Sunroc's new plant facilities.

ARDEN TAKES OVER AS PRESIDENT OF GAMA

T. T. Arden, executive vice president of Robertshaw-Fulton Controls Co., Lynwood, Calif., was installed as president of the Gas Appliance Manufacturers Association at annual board meeting in Atlantic City, October 10.

KAISER METAL, SUPERMATIC JOIN KITCHEN CABINET ASSN.

Kaiser Metal Products, Inc., Bristol, Pa., and Supermatic Products Corp., Burbank, Calif., manufacturers of Columbia Kitchens, have joined the Steel Kitchen Cabinet Manufacturers Association, it was announced by Arthur J. Tuscany, Jr., Cleveland, SCKMA executive secretary.

G. F. Richards, general sales manager, will be the Kaiser representative in SKCMA, and Arnold L. Rose, president, will represent Supermatic.

RHEEM TIGHTENS SALES DISTRIBUTION SET-UP

Rheem Mfg. Co., producer of the Rheem-Wedgewood line of gas ranges, is now in the process of overhauling its sales distribution system, and has set up a new franchising program.

In order to qualify under the program, franchised dealers must subscribe to high standards of business conduct. For example, they must agree under penalty of breach of franchise not to transhipp Rheem-Wedgewood products to any other than those franchised by the manufacturer.

Jim Graham, who directs Rheem-Wedgewood sales, stated, "The purpose and intent of the franchising program is to create an environment in which the established and equipped dealer can survive and prosper. His fate is our fate."

DEFECTIVE PLUMBING-WARE

DEFECTIVE WASHERS AND RANGE TOPS

D-ENAMELING SAVES UP TO 50% OF ORIGINAL PART COST

THE CAUSTIC BATH

THE WASH-OFF

SANDBLASTING

Over the past three years, D-Enameling has more than proved its dollars and cents value to manufacturers of ranges, bathtubs, sinks, refrigerator liners and washing machine tubs. Before D-Enameling, these manufacturers had to scrap defective parts. All the material and labor that went into them was a complete loss. Now, for a small cost, these same manufacturers are able to transform defective parts into first line salable, profit-building products. To cost-conscious management it is obviously smart business to spend a few dollars to save many more. One stove manufacturer, for example, through D-Enameling has been able to save as much as 50% of the original cost of range tops. If you're interested in cutting costs, it will pay you to find out about D-Enameling now. You'll be agreeably surprised how much the simple economics of D-Enameling can benefit you.

May we discuss this soon?

THESE INDUSTRY LEADERS KNOW FROM EXPERIENCE THAT D-ENAMELING TRANSFORMS SCRAP LOSS INTO PROFIT DOLLARS

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New Process *D-Enameling* Corp.

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ALUMINUM & MAGNESIUM CASTINGS

A typical Acme casting for a defense product. Fin sections have a wall thickness of 3/16".

Deep fat fryer casting including rod-type heating elements cast in as a complete unit. Acme has produced hundreds of thousands of these units.

Acme of Chicago offers a *complete engineering service* with over 33 years of engineering and foundry experience back of this service. Better light metal engineering service may mean the difference between success and failure in using light metal castings.

Acme of Chicago also offers a *complete casting service* including aluminum alloy permanent mold and semi-permanent mold castings and aluminum and magnesium alloy sand castings. We are interested in special castings too, including castings with steel inserts and castings with heating elements or tubing cast in as a complete unit. We also offer aluminum and magnesium heat treated and aged castings to meet military specifications.

When you need engineering and casting service for better light metal castings call Acme of Chicago.

ACME

ALUMINUM FOUNDRY CO.

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MEETINGS

NATIONAL METAL SHOW

National Metal Exposition and Congress, International Amphitheatre, Chicago, November 1-5.

HOME LAUNDRY CONFERENCE

American Home Laundry Manufacturers Association, annual Home Laundry Conference, Hotel Commodore, New York City, November 4-5.

ENAMELER CLUB MEETINGS

Central District Enamelers Club, dinner-meeting, Mansfield Leland Hotel, Mansfield, Ohio, November 5.

Midwest Enamelers Club, luncheon-meeting, LaSalle Hotel, Chicago, November 6.

ELECTRICAL MFRS. MEETING

National Electrical Manufacturers Association, semi-annual meeting, Haddon Hall, Atlantic City, November 8-11.

CANADIAN PACKAGING SHOW

Packaging Association of Canada, National Packaging Exposition and Concurrent Annual Conference, Automotive Building, Canadian National Exhibition Grounds, Toronto, Ontario, November 9-11.

TIME, MOTION STUDY CLINIC

Industrial Management Society, annual Time and Motion Study and Management Clinic, Sherman Hotel, Chicago, November 10-12.

APPLIANCE MFRS. CONFERENCE

Institute of Appliance Manufacturers, general meeting and management conference, Netherland Plaza, Cincinnati, December 6-8.

KITCHEN CABINET MEETING

Steel Kitchen Cabinet Manufacturers Association, quarterly meeting, Chicago, December 8.

CERTIFIED ZINC ALLOY PLAN
LICENSED PRODUCER
AMERICAN DIE CASTING INSTITUTE

When casting requirements call for ZINC, call Monarch. Since 1938 Monarch has been die-casting zinc for a wide range of applications. Our experience gained in casting both aluminum and zinc allows us to offer unbiased engineering consultation toward adapting the best metal and method for your requirements. Monarch's practical approach to all types of casting and finishing methods has gained increasing acceptance by leading manufacturers—resulting in better end products at lower end cost.

CERTIFIED ZINC CASTINGS OFFERS YOU 5 ADVANTAGES:

- Excellent strength and ductibility
- Closer cast tolerances
- Savings on machining
- Ease of finishing
- Low metal cost in relation to weight

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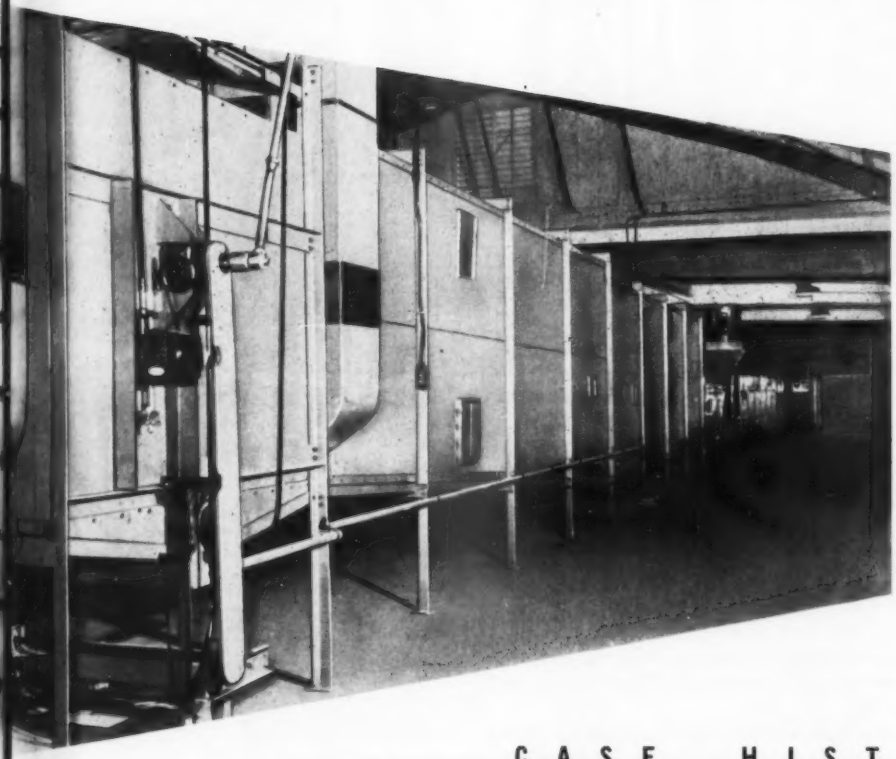
ALUMINUM Permanent Mold Castings • ZINC Die Castings • Aluminum Die Castings • MACHINING • FINISHING • ASSEMBLY

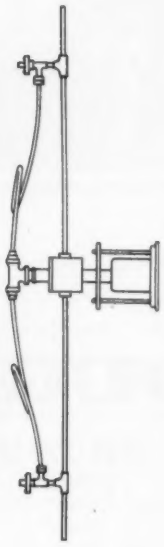
THE finish spotlight

Two-oven service out of a single-oven range is provided in Kelvinator's new 40-inch electric range for 1955. Double-oven utility is provided by means of a "bonus broiler" — a removable broiler element which may be transferred from its normal position in the right-hand oven and fitted into a special outlet for broiling in the left-hand storage compartment. Oven is equipped with disposable aluminum foil linings on the sides, and removable oven bottom, for cleaning ease. Right-hand oven door features a glass window.

PRA-CON'S rotary arm paint applicator

ds Improved Quality & Economy to Your Product





CASE HISTORY

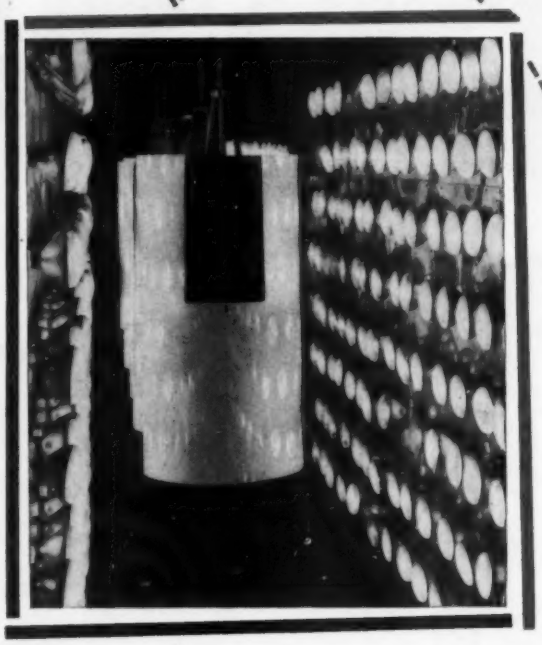
Refrigerator Cabinet 5' x 3' x 2'

Problem: COAT INTERIOR AND EXTERIOR SURFACES

	CONVENTIONAL FLOWCOAT EQUIPMENT	SPRA-CON ROTARY ARM PAINT APPLICATOR
Nozzles required	80	8
Paint—Gal./nozzle/minute	4	4
Total Gal. Pumped/minute	320	32
h.p. for pumping	7½	3
Tank Capacity	900	200
PSI at nozzle	5	5

◀ SEND FOR THIS FREE BOOKLET

30 MINUTES



TOUGH FINISH

. . . on tough time schedule!

Tough finishes are not tough problems—with unlimited time for baking or curing. When extremely fast baking schedules must be met, however, it takes an outstanding material to produce the long-lasting mar-resistance demanded for hot water heaters such as the Rex Heater, produced by The Cleveland Heater Co.

Thanks to Sherwin-Williams KEMCLAD® Appliance White, a total time cycle of 30 minutes is maintained in the finishing of these jacket exteriors, from bare metal, through automatic, electrostatic spray equipment and infrared oven, to finished jackets ready for assembly. Resulting finish has high hardness with flexibility . . . lasting gloss and washability . . . ability to withstand heat without discoloration.

If greater toughness, or faster baking—or BOTH—are properties you can use, it will pay you to investigate KEMCLAD. Call, wire or write: The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

SHERWIN-WILLIAMS
Industrial Finishes

it's as easy as this...

FOR
PREWAY Inc.

PERMA-VIEW

the window you can see through always!

"out of our carton— into your door"

Yes sir, it's as easy as this. The PERMA-VIEW oven door window comes to you ready for immediate installation in your range — to add a sales feature second to none.

The strong steel encased, double pane PERMA-VIEW window incorporates the finest quality heat resisting glass. It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." This "non-fog" window meets the constantly growing demand for "visible baking."

More and more range manufacturers are turning to PERMA-VIEW as a practical, economical and effective sales feature for their new models. We will gladly work with your engineering department in adapting its use to your range. Write or phone for complete information.

Phone MArket 4-2256

PREWAY INC. now offers PERMA-VIEW in 30" electric ranges and will soon incorporate the PERMA-VIEW window in two more lines.

MILLS PRODUCTS, INCORPORATED
1015 W. MAPLE ROAD • WALLED LAKE, MICHIGAN

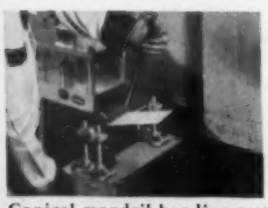
NUBELITE FINISHES

formulated to meet the service requirements of your products!

NUBELITE Finishes are custom made in Glidden Laboratories to provide the specific film properties required by the nature and operation of your product. That's why the name NUBELITE assures you a finish coating for lifetime appliance protection.

NUBELITE primers and enamels are adaptable to your finishing process, whatever your method of application and curing may be.

Service and technical service are an integral part of Glidden relations with all users of Nubelite.



Conical mandril bending test proves NUBELITE's high film strength and flexibility.

Spectrophotometer comparisons show NUBELITE's superior color retention after exposure.

Thousand-hour humidity test fails to blister or damage protective NUBELITE film.

THE GLIDDEN COMPANY

INDUSTRIAL FINISHES DIVISION

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San Francisco, Chicago (Nubian Division—1855 North Leclaire Avenue), Minneapolis, St. Louis, New Orleans, Cleveland, Atlanta, Reading. Canada: Toronto and Montreal.

Safe Transit—a great service

Gentlemen:

We appreciate receiving *finish* magazine, and in particular believe that the section devoted to Safe Transit is a great service to all industry.

W. G. Paradise
Engineer
Assn. of American Railroads
Chicago, Illinois

permanent magnet closures

Gentlemen:

After reading your article about Permanent Magnets in the September issue of *finish*, I would like to know the source for more engineering information on permanent magnet catch or closures.

Francis A. Noll
Chief Cabinet Engineer
Deepfreeze Appliance Division
Motor Products Corporation
North Chicago, Illinois

Reader requests for the source of more information on permanent magnet closures for appliances have received prompt attention—Eds.

Christmas gift time

Gentlemen:

We would like to enter the following subscriptions to *finish* magazine, to begin with the January, 1955, issue.

We think so highly of your publication that we are making this a Christmas gift to our representatives. It would seem that the regular receipt of so much pertinent information of value in their work would prove of great benefit not only to them but to us.

C. Whitfield Smith
Whitfield Chemical Co.
Detroit, Michigan

taking it easy after 37 years

Gentlemen:

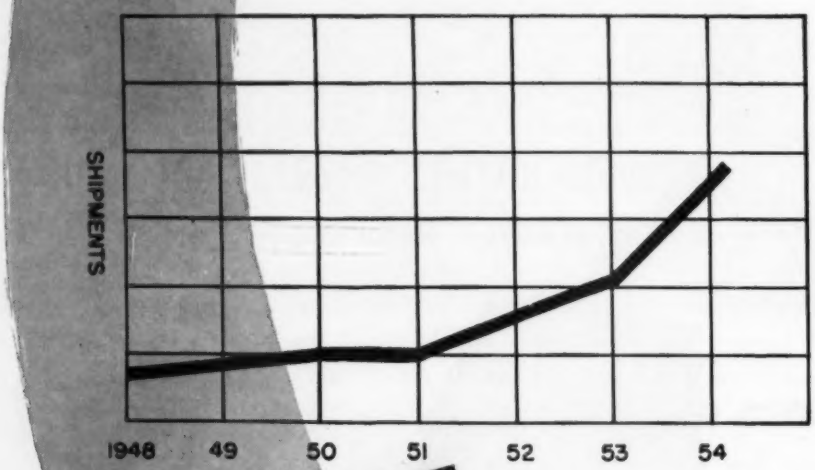
I am retiring from active duty with The Maytag Company, after 37 years with them. If you care to continue sending me *finish*, I will appreciate it, and would like to receive it at my residence address.

C. W. Clauser
The Maytag Company
Newton, Iowa

Your request has been granted—Eds.

the answer to your question...

Contrary to some reports heard around the country, Foote lithium chemicals are being shipped to industry in quantities far in excess of our shipments in any previous year.



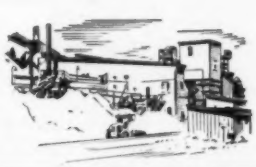
a simple chart that has surprised a great many users of lithium compounds...

LAST CALL for participation in the Second FOOTE LITHIUM AWARD PROGRAM. Awards totalling $2,000 will be made late next year for the best papers describing new research on lithium chemicals or minerals in ceramics. CLOSING DATE FOR ENTRIES IS NOVEMBER 1, 1954. Write for information now.

The use of lithium by industry has mushroomed as predicted and so has production. The supply picture should continue to improve as new facilities are made available in 1955. This is no idle chatter . . . it is based on sound facts. *Now* is the time to plan ahead with Foote lithium chemicals.

Foote — A Step Ahead in Industrial Ores and Chemicals

LITHIUM FOR INDUSTRY

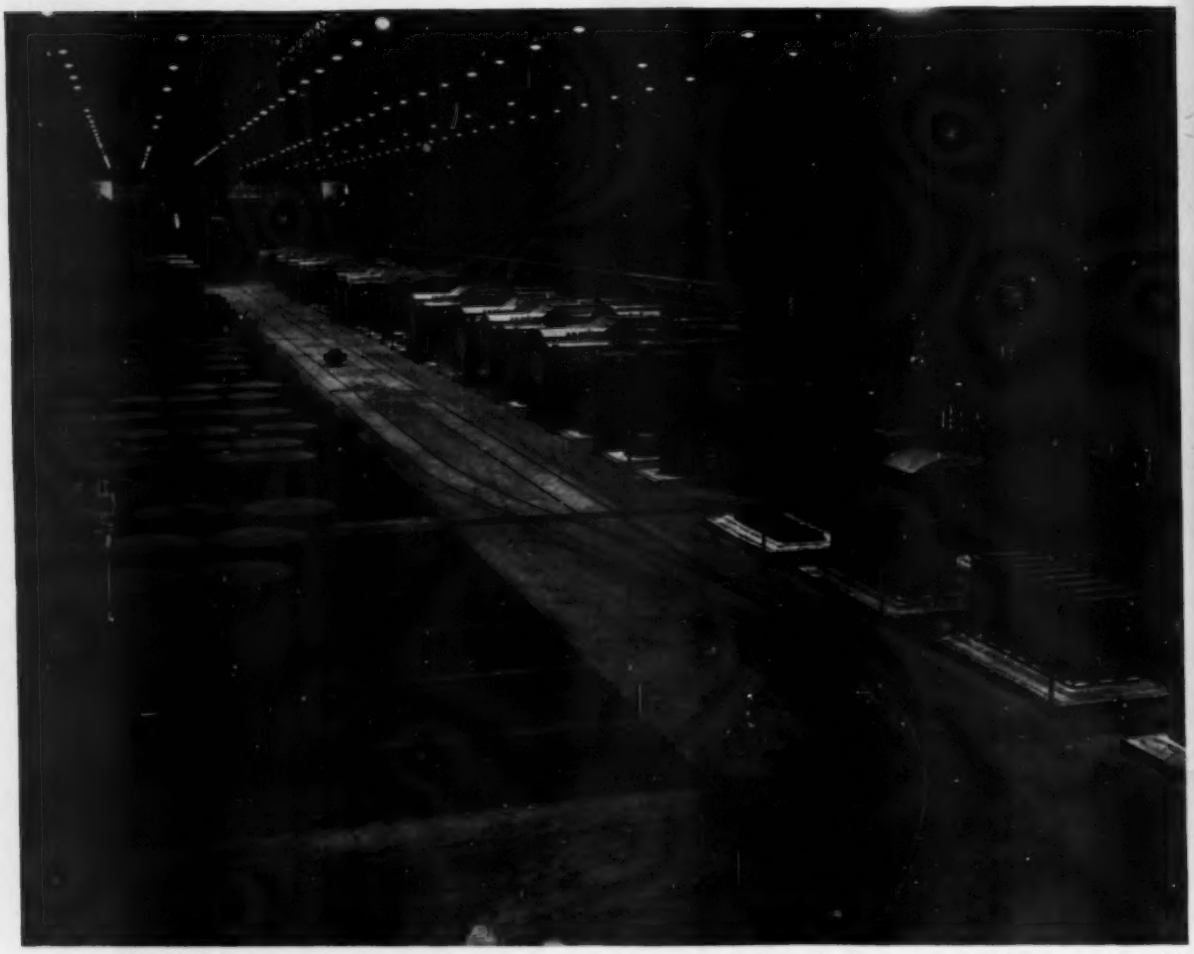


Kings Mountain, N.C. . . . where Foote is mining the largest known deposits of spodumene.

Sunbright, Va. . . . the world's largest lithium chemical plant.

FOOTE MINERAL COMPANY
412 Eighteen West Chelten Building, Philadelphia 44, Pa.
RESEARCH LABORATORIES: Berwyn, Pa. • PLANTS: Exton, Pa.; Kings Mountain, N.C.; Sunbright, Va.

Rolled right, tempered right . . . that's why Youngstown sheets form right



Battery of annealing furnaces (at right) in the new cold rolled sheet mill at East Chicago, Indiana.

"Proof of the pudding is in the eating"—and proof of the quality of cold rolled sheets is in the way they work up in your shop.

The parts or products you form from Youngstown sheets will be right—low in rejects, low in fabrication cost—because at Youngstown we stress quality above other considerations. Youngstown sheets start as top quality steel, are cold rolled to close specifications, annealed to exact requirements, tested and inspected at every step.

Phone our nearest District Sales Office for dependable cold rolled sheets and strip.

QUALITY YOUNGSTOWN SERVICE

Youngstown

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steels*

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

Welding the tank flu to the tank bottom. The operation is speeded by mounting the parts on a rotating mandrel which revolves at a constant speed. This weld seam is leak-tested immediately after welding. It is noteworthy that in all the steps of production, defects of any type are not allowed to pass far beyond their point of origin.

finishfotos

Highlights in production of water heaters

Part I of two-part photo story of selected production line operations at Rheem's South Gate, California, plant

by Gilbert C. Close • WESTERN EDITOR

finish During a speech at a recent west coast manufacturers' meeting, a leading industrial engineer made these remarks: — "We must remember, gentlemen, that product quality is not an adornment. Product quality is the 'blood and guts', so to speak — an integral 'something' that is woven into the fabric of the product as it travels along the production line."

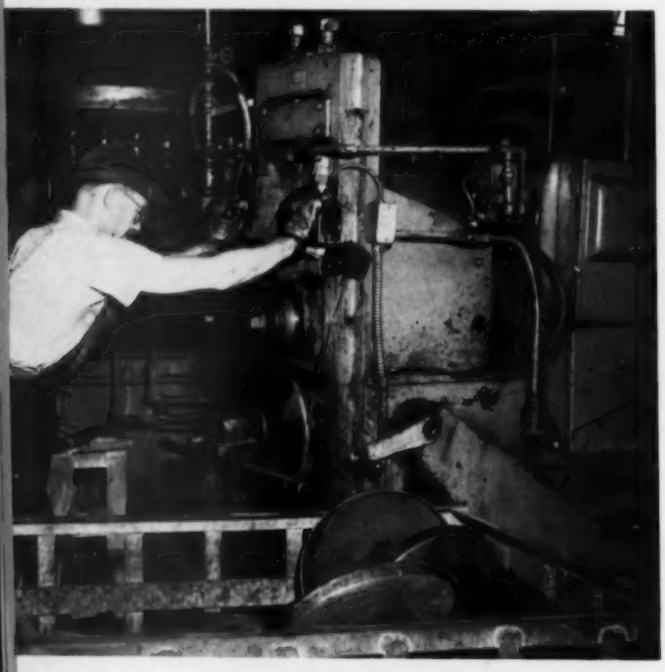
A few moments later, another speaker amplified these remarks by saying, "Superficially, all production lines appear pretty much the same, though some are used to turn out quality products while others produce 'competitive' products. It takes an

to Page 82 →

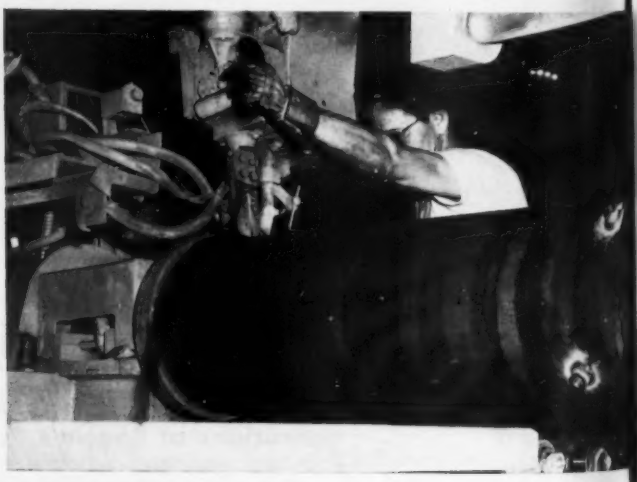
turn page for production photos →

Above: Rolling water heater tank bodies on a "true circle" automatic roll former. This machine was specially designed to produce a true tank body form, thus increasing strength and assuring an optimum fit of mating components. To facilitate roll former's operation, all tank body sheets are pre-squared on precision metal shears prior to forming.

Above: Welding tank bodies on a double-fixtured automatic welder. The double-fixture feature permits a tank body to be and prepared for welding at one end of the table, while another body is being welded at the other end. The metallic submerged welding head produces a dense, oxide-free weld seam with a mum of effect on adjacent metal.

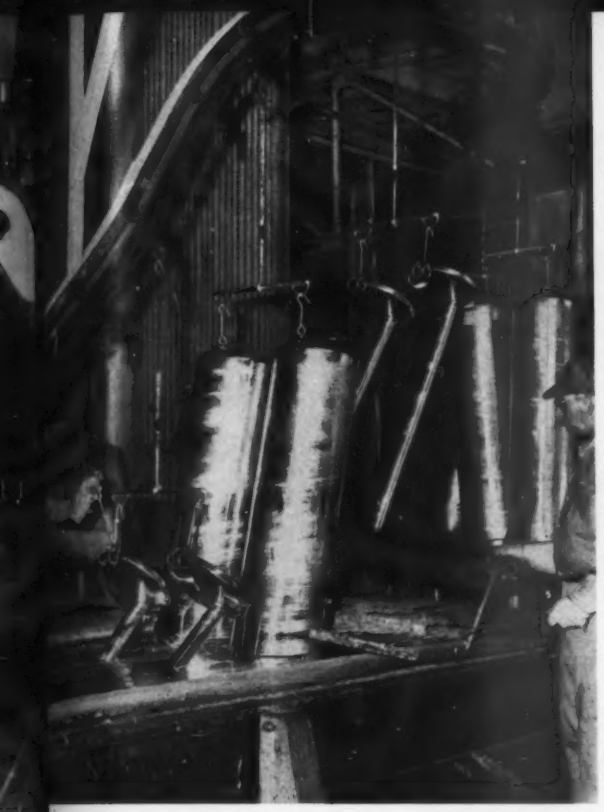


Above: Rolling in the rim of tank body heads prior to mounting. The slight inward taper of head rim produced by this operation assures a very tight press-fit of the head onto the body, which in turn assures a dense, leakproof weld seam. After rolling, tank heads are hung on the automatic washer chain (visible in background), and are thoroughly cleaned prior to welding.



Above: Welding tank body in place. Here again the submerged arc welding tech is employed to assure a dens ide-free weld seam. Absolute ment of the head with the b accomplished by means of fully centered clamping mo

Left: Preliminary soap test body and head weld seams, 20 psi internal air pressure air-tight mandrel seals the bottom during this operation soap test is an ideal method tecting even very small leak as might be caused by wel porosity.

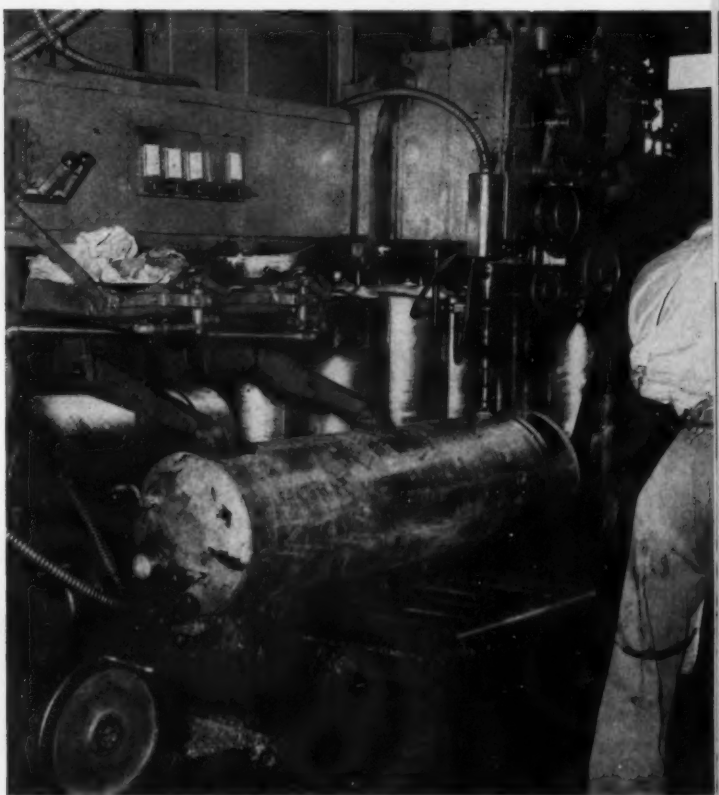


Left: Galvanizing tank bodies and the bottom and flu assemblies. The parts are hung in mated pairs on the conveyor so that all units necessary to complete a tank are processed at the same time. Drainage after galvanizing is no problem with these open-end assemblies. This 7-foot deep, 287,000-lb. zinc tank is blanketed with flux at the receiving end so that the parts descending through the flux blanket are prepared to accept the molten coating. Prior to galvanizing, the assemblies are pickled for 19½ min. in a 7% sulphuric acid solution at about 165° F., rinsed, then etched for 3½ min. in a 1% hydrochloric acid solution at about 130° F. Immersion time is carefully controlled by conveyor speed.

Above: Pressing the bottom and flu assembly into the tank body. The bottom is sized just large enough so that it will cause a metal-to-metal fit as it is pressed into place. This tightness of fit provides for a maximum quality weld seam joining the bottom to the tank.

Left: Welding tank bottom in place. While the water-cooled feature of the process has no effect on weld seam, which is formed by the pressure-resistance method, it prevents heat spread into adjacent metal, thus protecting adjacent zinc coating. A dense, solid seam is formed. Meanwhile, enough heat is evolved so that the low-melt zinc coating on tank interior and bottom flow together and form a zinc fillet at periphery of junction. After welding, exterior of weld seam is coated with aluminized paint.

Below: Pressure testing a finished water heater tank using 300 psi hydrostatic pressure. This pressure serves the double function of revealing the smallest leak, while at the same time applying a proof test load to the entire tank structure.



Above: Tapping tank spuds on an automatic tapping machine. Speed and accuracy result from this operation. Anyone who has tried to match up an inflexible pipe with a mis-aligned thread can attest to the value of this operation.

2 Great Bending Machines forming DEEP CONTOURS and IRREGULAR SHAPES in a single fast operation

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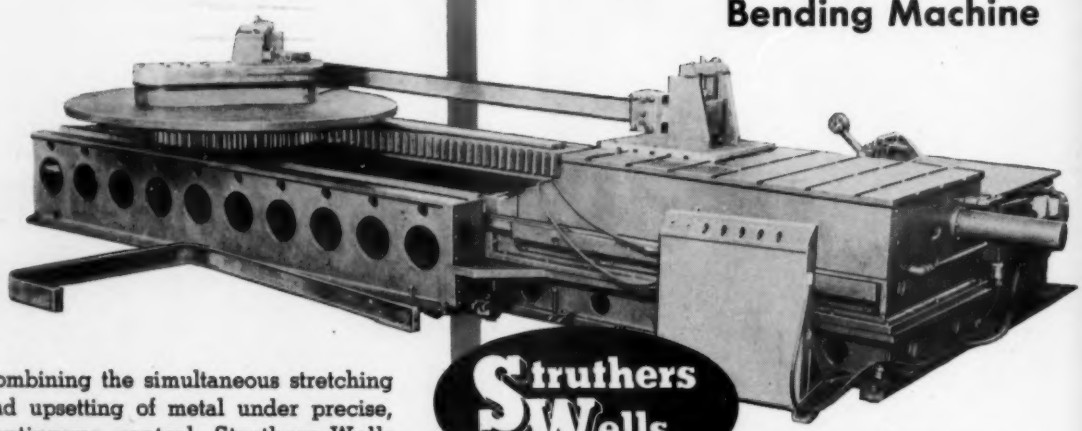

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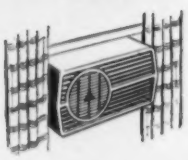

Fedders-Quigan Corporation, Buffalo, plans Tinnerman SPEED NUT savings in design stages

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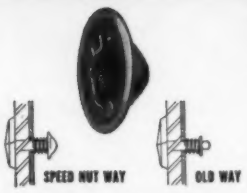
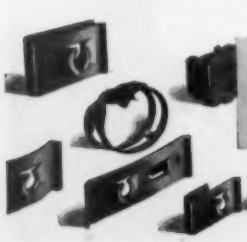


Cap-Type Push-On SPEED NUTS

Formerly a special clevis pin and lock washer were required to retain the spring coil and Comfort Circle grille as illustrated above. Now, Cap-Type Push-On SPEED NUTS press on by hand in *one* operation, lock with vibration-proof bite . . . for a big 82% savings!

Send for your copy of SPEED NUT "Savings Stories", an interesting booklet of Tinnerman savings to industry, write: TINNERMAN PRODUCTS, INC., Box 6688, Dept. 12, Cleveland 1, Ohio. *In Canada:* Dominion Fasteners Ltd., Hamilton, Ont. *In Great Britain:* Simmonds Aerocessories, Ltd., Treforest, Wales. *In France:* Aerocessoires Simmonds, S.A.—7 rue Henri Barbusse, Levallois (Seine).



TINNERMAN Speed Nuts®

MORE THAN 8000 SHAPES AND SIZES

Room air conditioner assembly at Amana

straight-line assembly operation parallel freezer assembly lines

Part IV of a series

THIS year, which marks the 20th anniversary of the entrance of Amana Refrigeration, Inc., Amana, Iowa, into the refrigeration field, also marks the company's entrance into the room air conditioner field.

The company entered this field with a fresh approach in engineering, design, tooling and manufacturing. The guiding objective in developing Amana's newest product was to make it an attractive furnishing for either the home or the office.

The housing or outer case of the room air conditioner forms a continuous smooth metal wrapper over top and sides. Edges are rounded to a smooth contour. The rear or outside end of the case terminates in a deep drawn stamped frame which is welded to the wrapper.

The one-piece cabinet front is molded from high impact sound-deadening polystyrene. It is a dark brown color, while the metal cabinet is tan. The cabinet is finished in a new type resin formulation applied as primer and finish coats, each separately baked on.

To carry out a cylindrical effect across the middle of the cabinet front, a curved plastic door covers the control dial when not in use. All controls are centrally located at the front. Switch and damper functions are interlocked through a single sliding knob, instantly adjustable to any one of six operating positions. The control positions are marked on a plas-

...e heating element, standard equipment all Amana room air conditioners, is attached to the evaporator shroud.

A drier bulb is silver soldered to an evaporator—one of many steps taken to insure a perfectly sealed refrigeration system.

Prior to charging with refrigerant, ... is evacuated (operation shown here ... attach... minutes. Note freezer line in back ...ed an...

tic dial, which is color-coded for ready identification. The entire dial marking is illuminated from a concealed pilot light.

Assembly operations

The room air conditioners are assembled on a 300-foot-long powered roller conveyor. Sub-assembly lines are located on both sides of this straight-through line, at points where the sub-assembly fits into the principal assembly.

Assembly starts with the base pan weldment, which is the basic frame for the air conditioner. It moves on the roller conveyor on a wooden frame which later becomes the base of the shipping crate. After the joints are "hot sealed", parts and attachments are installed, including: heating element, insulation, fan motor, blower, heat exchanger, evaporator across the front of the unit, condenser, exhaust and fresh-air damper, and starting capacitors. The insulation blocks heat transfer and condensation as well as acting as a sound deadener.

The blower and propeller fans are aligned to rotate in perfect synchronism. After compressor is bolted to the base pan, the evaporator and condenser tubing is silver soldered to compressor connections, and the refrigeration system is complete.

The unit is now evacuated for 7 minutes and charged with refrigerant. Then, successively, the compressor is wired electrically; the upper half of the fan housing is attached and sealed; the evaporator cover is attached and covered with sheathing felt; the glider control assembly is installed, followed by the front louvre and the operating cord.

High potential test for electrical insulation

The unit is then given a high potential test (double the rated voltage plus 1000 volts) to make sure the electrical insulation won't break down in future operation, and then a leak test to confirm that no refrigerant is leaking. Next the filter is slipped into position, and the return air damper is connected. The operating unit is now complete.

Mechanical operation of the room

Left: Mechanical operation of unit is being checked. The glider control is set at "heat" position, and the operator makes sure that heated air is being delivered.

Right: In "hot room", cooling effectiveness of air conditioner is tested. Wire connections to the unit in foreground enables the technician to compare the temperature or air entering and leaving the unit by studying the instrument readings.

...ompressor is wired; upper half of fan ... attached and sealed; evaporator cover ...ed and covered with sheathing felt.

Horizontal glider control is machine-screwed into position across front of unit. Front louvre and operating cord are then installed.

Fiber glass filter, in an extruded alumin... holder, is slipped into position. Filter ... be easily replaced by homeowner.

air conditioner is then checked by a technician who operates the glider control knob at all seven positions — to make sure that the dampers open and close properly, that the fans operate at the right time, exhausts and heats properly, and that the noise level is at a minimum.

Test room encloses part of main assembly line

Electrical and refrigeration characteristics are carefully checked in a "hot room", which is an enclosure around 30 yards of the assembly line. In this room, a constant 93° F. temperature is maintained along with controlled humidity.

Each air conditioner is "plugged in" to an overhead rolling power cable, which moves with the units as they move along on the conveyor. Each overhead cable connector is equipped to deliver 230 volts with a ground wire, 115 volts with a ground and 115 volts without a ground—to simulate the power supply in different sections of the country.

After the unit has operated for 30 minutes, technicians check: (1) watt consumption, (2) possible blower noise, (3) wattage consumption of heater unit, (4) performance when unit receives lower than standard voltage, (5) air delivery of unit, and (6) cooling power of unit.

Accepted units move from the "hot room", straight along the conveyor line, to the final assembly area. (Any unit which does not measure up to established standards is rejected and returned to have its trouble corrected.)

Next, an outer cabinet is placed over the operating unit by means of a special lifting fixture. Sides and top of the outer case are insulated with fiber glass and other materials for protection against sweating.

A sound-deadening plastic front and grille assembly is set in place and fastened, and the filter access door is attached. After final inspection, the unit moves on the conveyor line to a packaging area.

For packaging operations on both air conditioners and home freezers, see article in Safe Transit section of this issue.

Left: Following tests in "hot room", the outer cabinet is placed over the operating unit. This job is simplified by use of a special lifting fixture operated by the foot control shown in foreground.

Right: Plastic front for room air conditioner is set in place. The unique single glider control for operating the unit is hidden under the curved cover bearing the Amana escutcheon.

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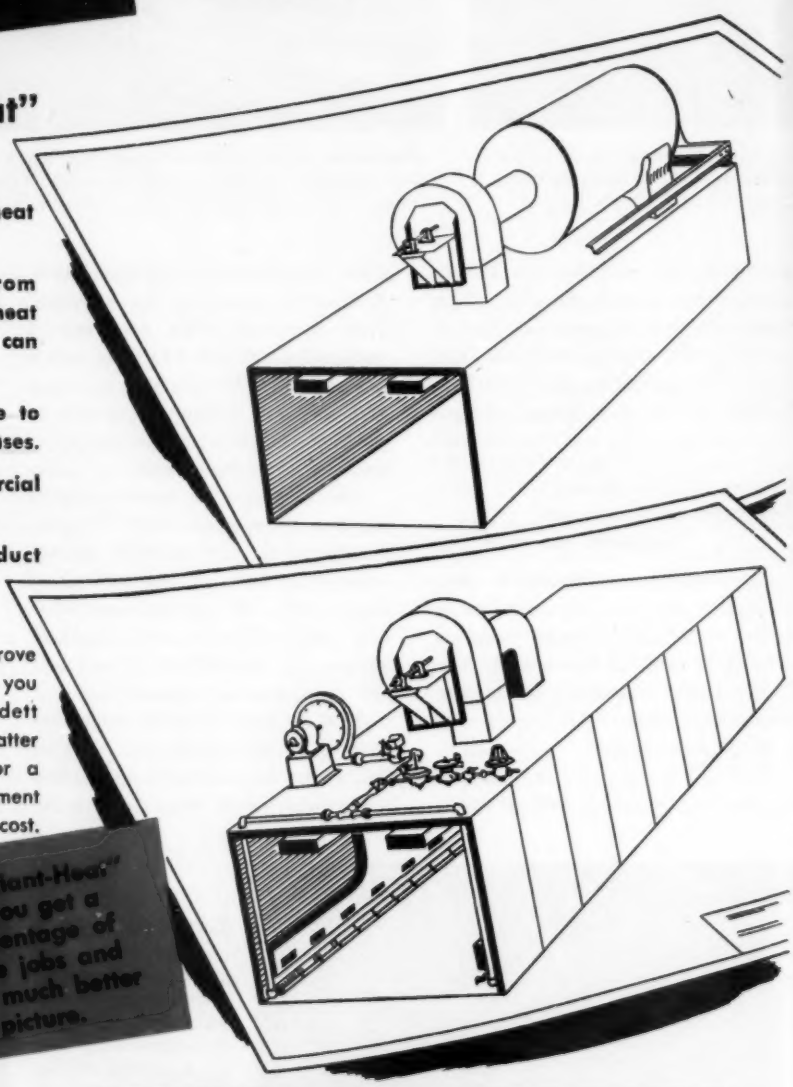

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Growth of nickel flashing —and its proper control

by J. J. Canfield • SUPERVISING METALLURGIST, RESEARCH LABORATORIES, ARMCO STEEL CORPORATION, MIDDLETOWN, OHIO.

finish

The words "nickel flashing" are commonly used in the enameling industry to mean the process of depositing a small quantity of nickel on enameling iron by immersion in a solution containing a nickel salt. This action is an electrochemical displacement in which iron goes into solution and nickel plates on the iron surface. A typical reaction is $NiSO_4 \cdot 6H_2O = Fe \rightarrow FeSO_4 + Ni + 6H_2O$. This happens because nickel is considerably below iron in the electromotive series.

The practice of nickel flashing has been found to aid in developing attachment of the porcelain enamel to the iron. As a result, nickel flashing is now considered necessary to make the best quality of enamel ware. Some twenty years ago, nickel flashing was done in relatively few plants and their control methods were very poor by today's standard. Much better methods of control have been developed and nickel flashing is now widely used in enameling plants.

Why nickel instead of cobalt?

Some explanation should be made as to why nickel is in general use rather than cobalt. Both act to improve adherence of the enamel.

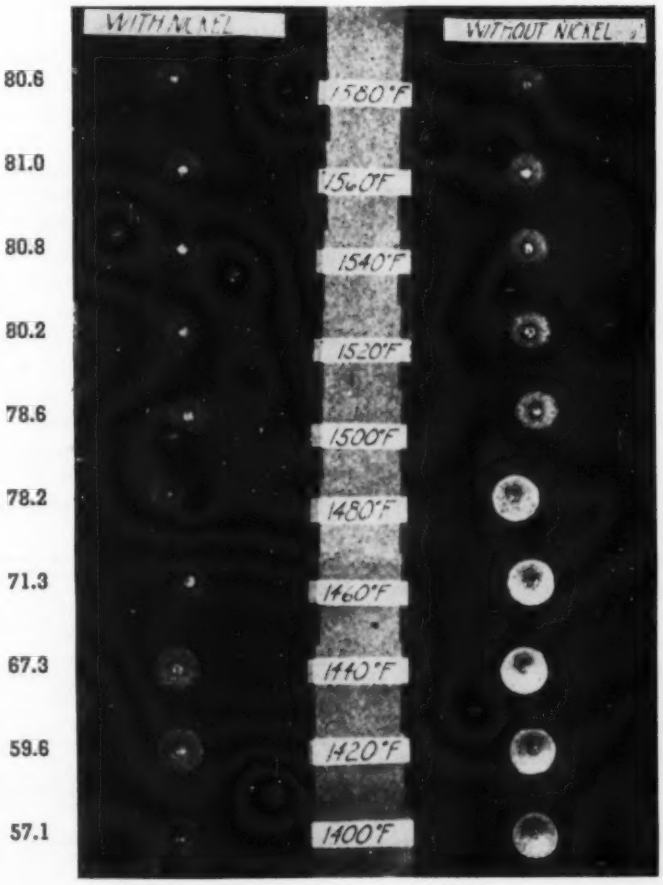
Cobalt oxide has been expensive and many tests have been made to replace it with a satisfactory material at lower cost. As a result, nickel oxide has partly replaced cobalt oxide in the fused enamel frit. Cobalt oxide, however, has not been entirely replaced in the conventional blue ground coat frits even though its cost is several times that of nickel oxide. Besides the consideration of cost, cobalt is not readily deposited on the iron by electrochemical displacement. It is somewhat amphoteric and could not be kept readily on the iron surface as a thin metallic film. Consequently, nickel flashing has developed into a more feasible practice to supplement the action of cobalt and nickel oxides in the enamel glass.

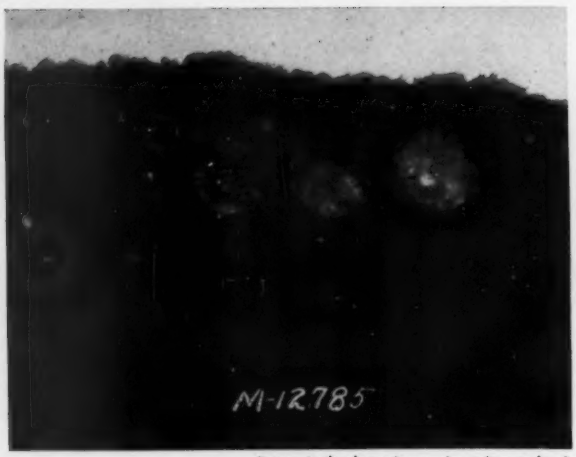
Proof of bonding properties of nickel

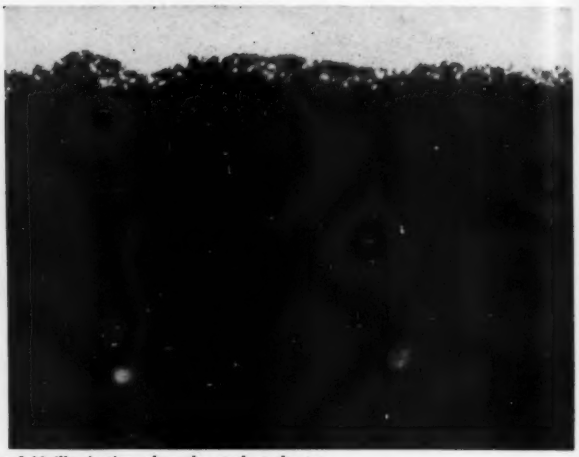
The effect of the thin metallic film of nickel on adherence has been

Figure 1 — The effect of nickel flashing on enamel bond.

Evaluating Adherence of Blue Sheet-Iron Ground Coats







Note: Both photomicrographs, taken under bright field illumination, show the steel at the top.

Figure 2 — An example of poor enamel bond (undissolved oxide at interface).

Figure 3 — Good enamel bond (oxide dissolved in enamel and metal roughened).

shown by J. L. McLaughlin.[1] Figure 1 shows some of his results. He prepared two sets of samples from the same sheet of iron by nickel flashing one group and not nickel flashing the other. One sample from each group was fired at 1400 F. and at 20 F. intervals to 1580 F. Impact adherence tests were made on each sample. The adherence was excellent on all samples except those in the non-nickel flashed group fired below 1520 F. However, some adherence appeared to begin at 1480 F. on the non-nickel flashed group. These results showed clearly that nickel flashing does aid adherence. Figures 2 and 3 at 500X are cross sections of a poor bond made by underfiring and a good bond made by regular firing of the blue porcelain enamel ground coat. These are shown to illustrate the enamel structures obtained by McLaughlin. At the interface of the enamel and metal there is a layer of undissolved iron oxide associated with the poor bond, and this has dissolved in the enamel when good bond is made by further firing. It is clearly evident that the enamel roughens the metal during firing and provides attachment. It is also clear that nickel flashing promotes this development of bond.

It must not be concluded that all that is necessary to obtain excellent adherence is to expose the metal to a nickel flashing bath. There are a number of factors to consider and controls must be established for best results.

Let us consider first the function of the extremely thin film of nickel on the metal. Only a few millionths of an inch thick. It would be both interesting and worthwhile to know exactly how nickel oxide or cobalt oxide acts in the enamel to promote bond. This has been debated at length, and there are several theories. Eugene Wainer and W. J. Baldwin[2], and L. A. Johnson and E. E. Howe[3], have discussed adherence in relation to nickel flashing and have given a number of very interesting observations and many references. W. N. Harrison[4] and associates found that some cobalt is precipitated on the iron surface during the firing of a blue ground coat. They consider that these cobalt particles act with the iron as localized concentration cells so that the iron surfaces are roughened. This corrosion theory is in confirmation of the earlier views of H. F. Staley[5] and Adolf Dietzel[6].

It is generally believed that nickel behaves similarly to cobalt in development of a bond of porcelain enamel to iron. Regardless of whether this explanation is correct, it is a known fact that the metallic nickel on the iron surface promotes attachment. The nickel deposited by the nickel flashing solution apparently has a similar effect to that precipitated from the ground coat enamel during firing. It would appear that the nickel flashing is a somewhat more efficient process in that it places the nickel in the sphere of action, at the interface of enamel and metal.

Optimum range of nickel deposits

The optimum range of nickel on the metal surface to obtain a good enamel bond may vary slightly with the metal. However, for using a blue ground coat, this range is near .03 to .06 grams of nickel per square foot of metal surface. With less than .03 grams nickel/sq. ft. of surface, the enamel bonds tend to be more erratic and not always good. Above about .03 gms. the bond is usually very good. The upper usable limit is determined by economy and the amount which may cause surface defects or poor bond. About 0.20 grams of nickel/sq. ft. of surface has sometimes been found to cause fine pits or bubbles in the enamel surface.

It is possible to deposit so much nickel on the surface that the best adherence will not be obtained. It is unnecessary to have more nickel than that which will usually insure development of a good bond. Therefore about .06 gms. Ni/sq. ft. of surface is considered a good upper limit when

1. J. L. McLaughlin, "Evaluating Adherence of Blue Sheet Iron Ground Coats", Journal American Cer. Soc. 32, 166-170, 1949.

2. Eugene Wainer and W. J. Baldwin, "Nickel Flashing and Its Relation to Enamel Adherence", Jour. Amer. Cer. Soc. 28, 317-326, 1945.

3. L. A. Johnson and E. E. Howe, "Factors Governing Adherence of Enamels Applied to Sheet Iron", Jour. Amer. Cer. Soc. 29, 296, 301, 1946.

4. W. N. Harrison, J. C. Richmond, J. C. Pitts and Stanley G. Benner, "A Radioisotope Study of Cobalt in Porcelain Enamel", Jour. Amer. Cer. Soc. 35, 113-120, 1952.

5. H. F. Staley, "Electrolytic Reactions in Vitreous Enamels and Their Relation to the Adherence of Enamels to Steel", Jour. Amer. Cer. Soc. 17, 163-167, 1934.

6. Adolf Dietzel, "Adherence in Sheet Iron Enamelware", Sprechsaal 68 (1) 3-6, (2) 20-23, (3) 34-36, (4) 53-56, (5) 67-69, (6) 84-85, 1935.

using ground coats containing nickel and cobalt.

In the application of a single fired white enamel applied directly on the metal with one fire, the optimum nickel deposition appears to be near 0.12 grams Ni/sq. ft. of surface.

The nickel flashing process has undergone many changes in the past twenty years. G. H. McIntyre[7] in his survey on plant practices from 1934 to 1945 found wide differences, particularly in the earlier years. Double and single nickel salts were used in concentrations of 1 to 4.25 oz./gallon. The pH varied from 6.2 to 3.5, temperatures from 120 to 190 F., and boric was used often as a buffer with adjustment of pH by ammonia additions.

Since 1945 the nickel flashing practices have followed somewhat the pattern of low pH, about 3.5, and the use of sodium hydroxide to adjust the pH. A patent[8] to General Motors Corp. by H. W. Alexander and R. S. Sheldon claimed the use of sodium hydroxide to adjust pH. This overcame the formation of complex nickel ammonium salts when ammonia was used, and consequently, the quantity of nickel deposited could be regulated more easily. As a result, the nickel flashing solutions have become somewhat standardized.

Sequence for pickling line including nickel

The sequence of cleaning, pickling and nickel flashing treatments is generally as follows:

(A) Clean free of oily material by boiling cleaning solution.
(B) Rinse with cold water.
(C) Pickle in H_2SO_4, usually about 5 min. near 150-170 F. with 7% acid.
(D) Rinse in cold water.
(E) Immerse in $NiSO_4$ $6H_2O$ solution, 1 oz./gal., 170 F. pH 3.2 to 3.5. (Time is controlled to give desired deposit.) (pH is adjusted with NaOH or H_2SO_4.)
(F) Rinse in cold water pH about 3.5.
(G) Rinse in neutralizer.

The acid rinse after the nickel solution tends to remove hydrolyzed iron and nickel salts. In some plants sodium cyanide solution is used as a rinse before the neutralizer and this aids in removal of any iron or nickel salts. In this case the cyanide solution is best maintained below about 130 F. as decomposition becomes more rapid above this temperature and the rate of removal of the nickel by the cyanide increases with higher temperatures.

Methods for determining nickel deposit

There are several methods to determine the nickel deposited on the iron. The method first used was to cut a 2 x 2 inch sample from the metal, dissolve the nickel on the surface by short immersion in nitric acid, and then determine the nickel by the usual titration method. This method was long and tedious and not useful for enameling plant control. At least 15 minutes were required to make a determination.

The control method now in rather general use in enameling plants is described in P. E. I. Bulletin T-16 "Test for Determination of Nickel". This method is rapid and sufficiently

to Page 84 →

7. G. H. McIntyre, "Nickel Dipping", Proc. of 7th Ann. Forum, Porcelain Enamel Institute, pp. 20-33, 1945.

8. U. S. Patent 2,265,467, — 12/9/1941 to Gen. Motors Corp. by H. W. Alexander and R. S. Sheldon.

Figure 4

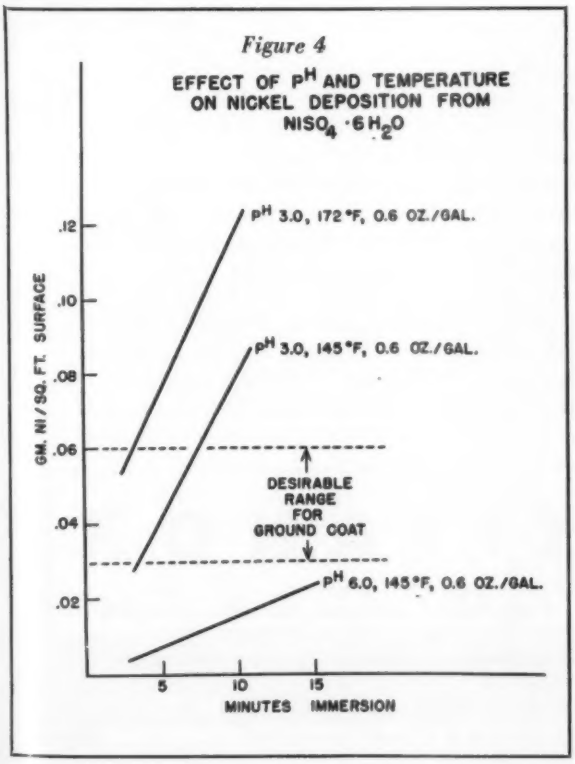
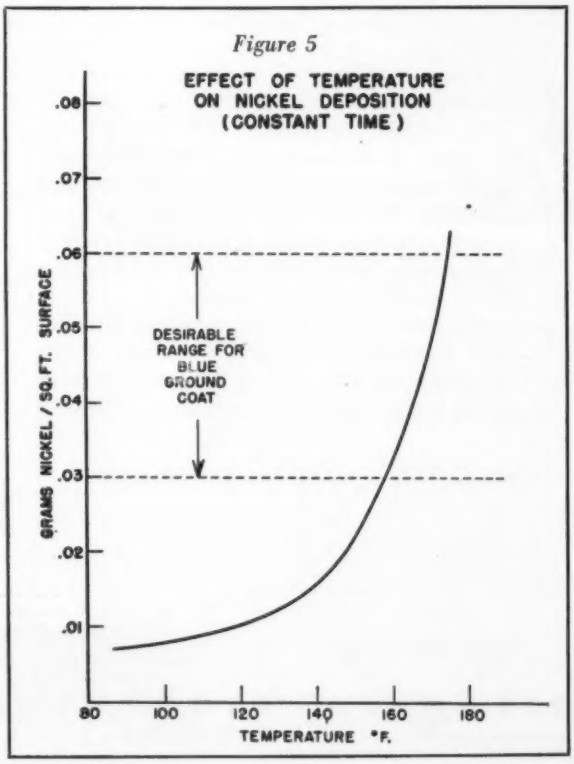
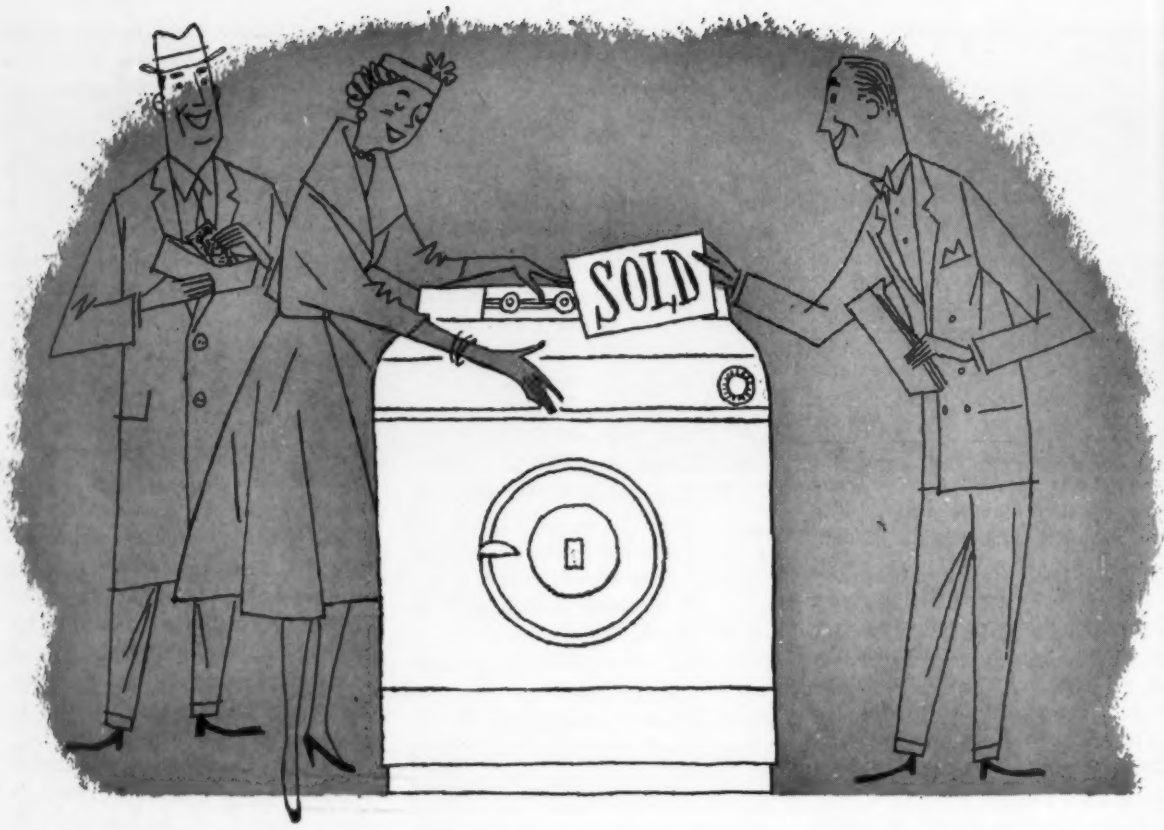


Figure 5





the finishing touch makes all the difference

For customer appeal, the appearance of the finish can make the big difference. And for long satisfactory service, the durability of the finish is extremely important. Only porcelain enamel will retain for a lifetime the sparkling beauty that attracted the customer in the showroom, and porcelain offers high resistance to detergents and the action of household acids and alkalies.

Modern titania porcelain enamel is a film that matches its strength with that of the steel to which it is applied. Titanium dioxide is the factor that puts porcelain in the film category. And the titanium dioxides that do this job best are TITANOX-TG and TITANOX-TG-400—the only titanium dioxides made specifically for porcelain enamels.

Consultation with our Technical Service Department will provide assistance in solving your frit problems. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 2; Boston 6; Chicago 3; Cleveland 15; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 9, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

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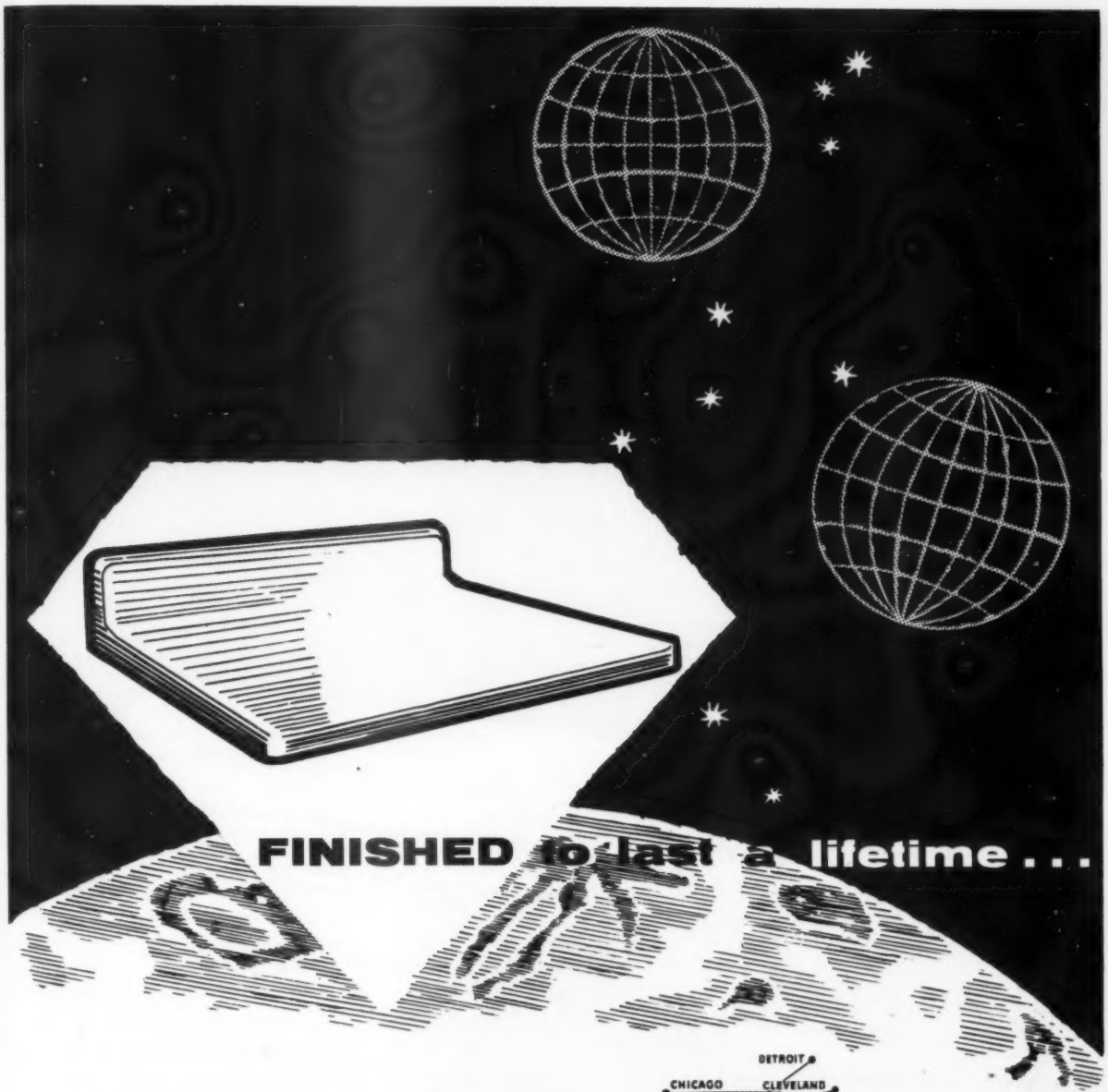
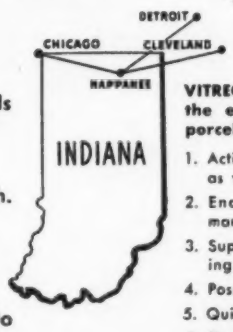


The reason why porcelain enamel is being used more and more by manufacturers in many different fields is because it *is* the lifetime finish. For instance, a clothes dryer with a porcelain enameled top won't lose its attractive appearance. It won't scratch. It won't rust and stain clothes that are folded on it. Refrigerator pans last indefinitely. Outdoor tables need no refinishing. Before long your desire to give your customers the most for their money will lead you to redesign, changing paint to porcelain enamel. Vitreous Steel Products Co. has the experience and the knowledge and the manufacturing capacity to meet your demands.



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Plan... for the Lifetime Finish

Flow coat priming

an elementary article on flow coating, clarifying the types of equipment in current use, and a brief resume of the characteristics of current materials and equipment

by C. O. Hutchinson • NUBIAN INDUSTRIAL DIVISION, THE GLIDDEN COMPANY, CHICAGO.

IN the article, "Flow Coating in the Home Appliance Field" *(finish,* April, 1951), a description of the fundamentals of flow coating in the appliance industry was presented. This article is in the nature of a progress report covering developments in materials and equipment, and based on field service reports.

A typical primer used in the appliance industry has a theoretical coverage of approximately 680 sq. ft. per gallon at 1 mil film thickness. When conventional hand spray primers are used, the normal average film thickness of the primer is .7 of a mil. Therefore, the primer is capable of covering 970 sq. ft. per gallon at .7 mils average film thickness. However, figures of approximately 450 sq. ft. per gallon are more nearly representative of production.

In flow coat priming in the appliance industry, users of finishing materials have capitalized on the ability of some of the modern finishing materials (epoxy resin containing primers) to give adequate metal protection at vastly lower film thicknesses. Many of these products give very excellent protection at .5 mils film thickness. The modern flow coat machines are constructed in such a way that practically all of the material consumed ends up on the work being painted, since adequate sized drain chambers are provided. Therefore, coverage figures of something like 1800 sq. ft. per gallon are possible in production using film thicknesses of 0.3 to 0.4 mils.

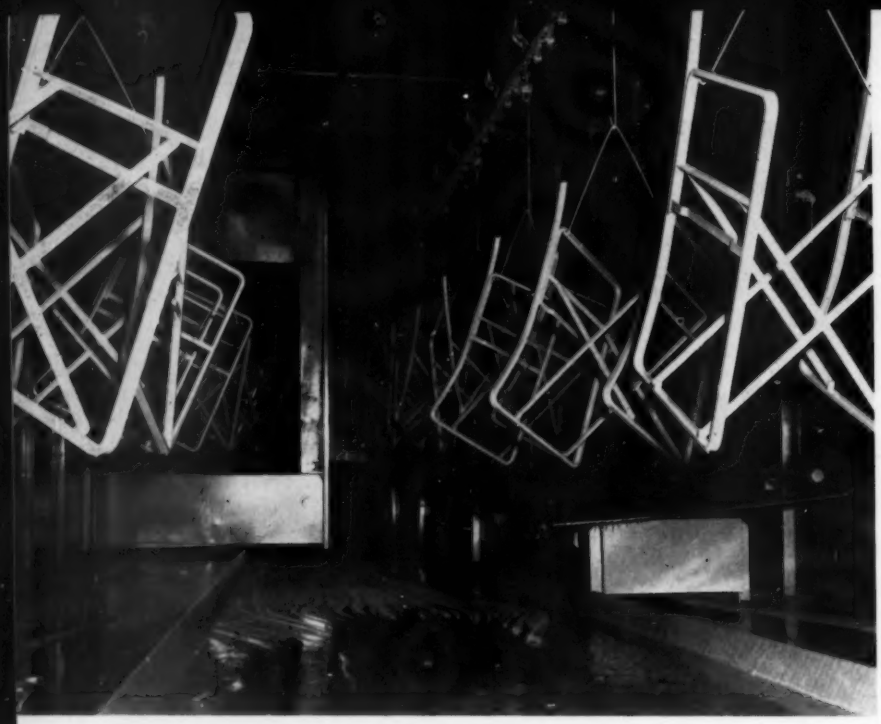
There are several principles of flow coat application that are being used at the present time. There are strong differences of opinion as to which method produced the most economical operation. The chief differences of opinion lie in the solvent consumption in these various methods. It is, of course, very difficult to prove which one of the principles of flow coating is the most economical, since very few manufacturers using production flow coating machines are in position to modify their equipment so that prolonged production runs can be made for direct comparison.

Three flow coating methods

1. Stationary nozzle flow coating (sometimes called "high pressure" flow coating). In this process, flow coating is accomplished by a large number of stationary nozzles with sufficient nozzles so that a coating can be applied to all of the required areas. Minimum vestibule and practically no drain chamber are normally incorporated in this type machine. Up until quite recently, practically

finishfoto

Small section of the exterior of a flow coating machine at the Hotpoint plant in Milwaukee, showing material tanks and controls. Operator is running a viscosity test.



This unusual photo shows the interior of a flow coat applicator at the Troy Sunshade plant in Troy, Ohio. View is in the vapor drain section. Ware at left is leaving applicator section.

all production flow coating was done by this method.

2. Moving nozzle flow coating. The revolving or moving nozzle type flow coating has found widespread application in the appliance industry because of the vastly decreased number of nozzles required to coat a given object and, therefore, the greatly reduced pump capacity, circulating tank capacity, etc. A low volume of material and a high degree of atomization (mechanically imparted) are characteristics of this process. These machines have been installed for production application of an epoxy type primer on laundry appliances and have proven their ability to coat many relatively inaccessible areas. So far as I know, these machines are always installed with a good sized drain chamber and with many convenient piping arrangements to give maximum flexibility in flow coating machine operation.

3. Low pressure flow coating. The term "low pressure" flow coating has been applied to a particular process in which a piece of tubing or pipe normally is used as a nozzle, with very little if any restriction on the end of the piece of tubing. Paint flow through this tubing is directed in such a way that the stream of paint strikes the surface of the object to be coated with minimum velocity. Therefore, a minimum amount of splash is produced. These machines are built with and without drain chambers and are doing excellent work on an economical basis in many industrial applications.

Editor's Note:

This second article by Mr. Hutchinson, on the general principles and progress of flow coating, serves as a background for articles which have been published on specific plants showing the practical application of the process for the coating of home appliances and other metal products.

One point that our editors feel will be quite interesting to *finish* readers is the fact that while the cost of flow coating installations for varied applications vary widely, as might be expected, some installations have been made at figures below $25,000.

When the potential savings as reported by users are taken into consideration, it appears that there is good reason for the continued expansion in use of the process.

In studying some installations of the various types of flow coating equipment, it may be said that on the No. 2 process, a flow of approximately 30 gallons per minute might be considered normal. For the No. 3 system, the ratio might be about 5 to 1; in other words, about 150 gallons per minute on the "low pressure" flow coating setup.

Depressed chambers advantageous

Since the solvent vapors involved in flow coating are heavier than air, it has been found desirable to depress the flow coating chamber below the level of the entrance and exit openings. This takes advantage of the "heavier than air" characteristic of the solvent vapors to entrap them, and thus reduce vapor losses.

A study of flow coat primer application shows two basic improvements for the paint user; namely, vastly decreased direct labor in the application of the finish, and great improvement in efficiency in the use of finishing material. The flow coating processes greatly reduce the number of gallons and, therefore, the number of dollars worth of finishing material used to finish a specific number of parts of components. The two advantages outlined are, of course, common to all of the three methods of flow coating described.

It is very difficult to evaluate machines on this basis, due to the lack of direct comparison between different installations doing identical work. This takes into consideration the type of flow coating process in use, the type of construction of the flow coating machine, the character of the ware or parts being processed, and the total load in the flow coating machine. In contrast to what might be anticipated, the percentage of solvent consumption increases as the percentage of flow coating machine capacity decreases. For instance, an empty machine will consume more solvent when in operation than a completely loaded machine. This is explained in the fact that the dissipation of volatile material is in direct proportion to the length of travel of the spray.

Case histories showing relative consumption of solvent

The following represents the average results based on a number of case histories representing production installations in the field.

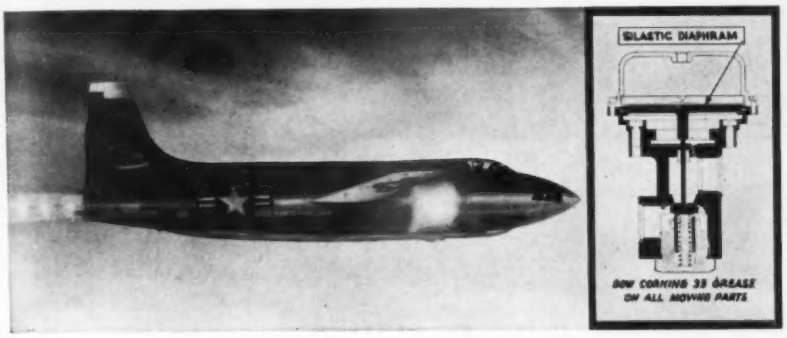
System No. 1 (stationary nozzle flow coating), without depressed flow

to Page 80 →

DOW CORNING CORPORATION

Silicone News

FOR DESIGN ENGINEERS



DOW CORNING SILICONES SOLVE DESIGN PROBLEM IN FUEL SYSTEM OF WORLD'S FASTEST AIRPLANE

The 1650 mph rocket-powered Bell X-1A is fueled with a mixture of alcohol-water and liquid oxygen. The oxygen supply is held near its boiling point of —297 F and a belt of frost nearly an inch thick collects around the fuel tanks.

The oxygen passes from the supply tanks to the rocket engine through a regulator valve which is controlled by nitrogen gas under pressure. This type of valve works well under normal conditions. At such extremely low temperatures, however, conventional valve diaphragms stiffen and become inoperative. Under certain conditions oxygen is present in the regulator valve and could, in contact with conventional organic lubricants, cause a violent explosion.

Bell engineers successfully solved these two problems with the aid of Dow Corning silicone products. Silastic 250 was specified for the valve diaphragms. Designed to meet AMS 3302B, Silastic 250 retains its rubber-like properties from below —100 to over 500 F.

The explosion hazard was reduced by using Dow Corning 33, a semi-inorganic silicone grease with a serviceable temperature span of —100 to 300 F. Bell's engineers report that this silicone grease "... is compatible with oxygen and therefore can be used as a lubricant in valves which may be exposed to oxygen. Ordinary grease, when used in such places, would be an explosive hazard." *No. 10*

Silicone-glass Laminates Offer Product Designers New Freedom

Silicone and its chemical cousin glass combine here in lightweight structural parts for hot jobs. Dow Corning 2106 is used to bond glass cloth to form laminated tubes, ducts, plates and honeycomb structures. Light, strong and arc-resistant, these parts stand 500 F continuously and short time exposures as high as 700 F. *No. 12*

Ready to use Dow Corning Silicone Foaming Powders produce heat-stable, nonflammable, easily machined, low density foam structures for electrical and thermal insulation. Can be foamed in place and often cured in service. Recently published data sheet describes applications, properties and foaming characteristics. *No. 13*

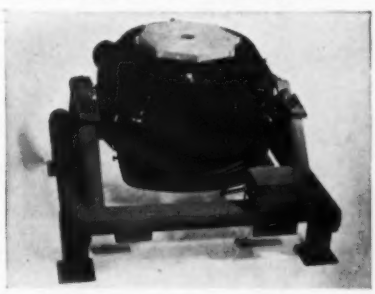
"What's a Silicone?" is the title of a 32 page booklet which answers that often asked question in semi-technical terms. Indexed and illustrated, this booklet has earned an international reputation as the most interesting and informative description of silicones ever published. *No. 14*

Silicone Insulation Protects Shake-Tester Against Overloads

The success of manufacturers producing highly specialized electrical equipment frequently hinges on the trouble free performance of their units. That's why more and more of these manufacturers are building silicone (Class H) insulation into their products.

Take the Calidyne Co. of Winchester, Mass., for example. For six years Calidyne has been manufacturing a line of electro-dynamic "shakers" used to determine the vibration resistance of various assemblies, machines and equipment.

Units to be tested are fastened to a shaker table which is then connected to the armature coil. Vibratory motion is achieved and controlled by the simultaneous passage of an AC current through the armature coil and field of the electromagnet.



No Calidyne shaker has ever been reported burned out, although some are occasionally operated for days at top load. Built in blowers keep the coils cool enough when operated under standard loads. But it's the Dow Corning Silicone Insulation that provides the necessary protection against accidental overloads. *No. 11*

Design Edition 3

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On the left the bottom half of a brewer, with three-piece weld inserted, is turned over, and half is fitted over it. On the hook-like tool is used to collar jig, after welding, and the jig is removed from the assembl

Producing premium priced stainless steel cookware

Part II — welding, buffing and assembly operations at Cory

Exclusive feature finish

The first part of this article on stainless steel cookware production at the Nicro Division of Cory Corporation, Chicago, covered materials, cost cutting methods and induction annealing operations. This second part covers welding, buffing and assembly operations.

The almost spherical shape of a Cory coffee-brewer bottom half — the part that holds the brewed coffee — is produced by welding together two drawn pieces. Both are roughly hemispherical, with a "flat" on the bottom half for a base, and a necked opening in the top half, which of course is the pouring aperature.

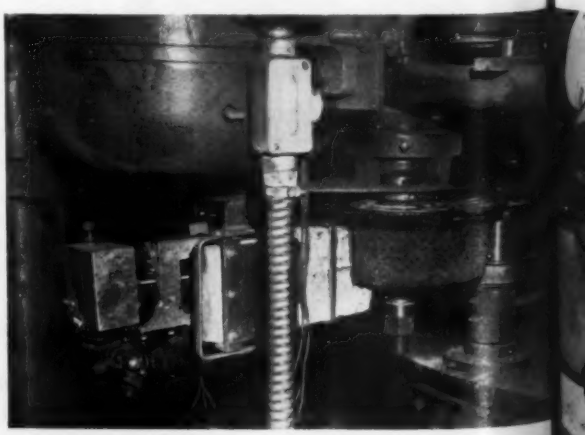
Argon-gas-shielded arc welding is used to make the circumferential seam. The thickness of the stainless steel is about .031 inch, and the diameter is approximately 6¼ inches.

Making a welded seam that will be virtually invisible, after being polished smooth, requires precise alignment. This depends, to begin with, on close control of dimensions of the drawn halves and cleanly trimmed edges. Then, the tooling used for welding itself must allow very little eccentricity, out-of-squareness, or elastic deformation.

These requirements are met by using a collapsible jig inside the joint, and forcing the two halves together with a pneumatic "live-tailstock" on

Left: Automatic buffing wheel dresses the outside corner radius as pan rotates on its spindle.

Right: The white bar of material pressing against the wheel is abrasive material in stick form.



Left: The two parts, with the jig inside, are placed in lathe-like welding setup.

Right: Watching the arc, the operator guides the inert gas-shielded welding head to follow the seam precisely while the parts rotate.

a lathe-like tool where the weld is made. The three-piece steel jig also acts as a back-up bar at the weld, and it contributes to the neatness of the seam. Any roughness or drip-through inside the coffee brewer would be objectionable as a dirt-catcher, and would be expensive to remove mechanically. The smooth joints as welded actually clean up sufficiently with electropolishing so that they need no mechanical finishing.

Welding is done with Heliarc equipment using a 3/32-inch diameter thoriated tungsten electrode. The current setting is 175 amperes; argon gas flow is 15 liters per minute. Water cooling is employed at the electrode holder. The welding fixture rotates at approximately 7 rpm, which works out at about 135 inches per minute welding speed.

Bowls arrive from the polishing room on a conveyor. First the handle band is attached, followed by the

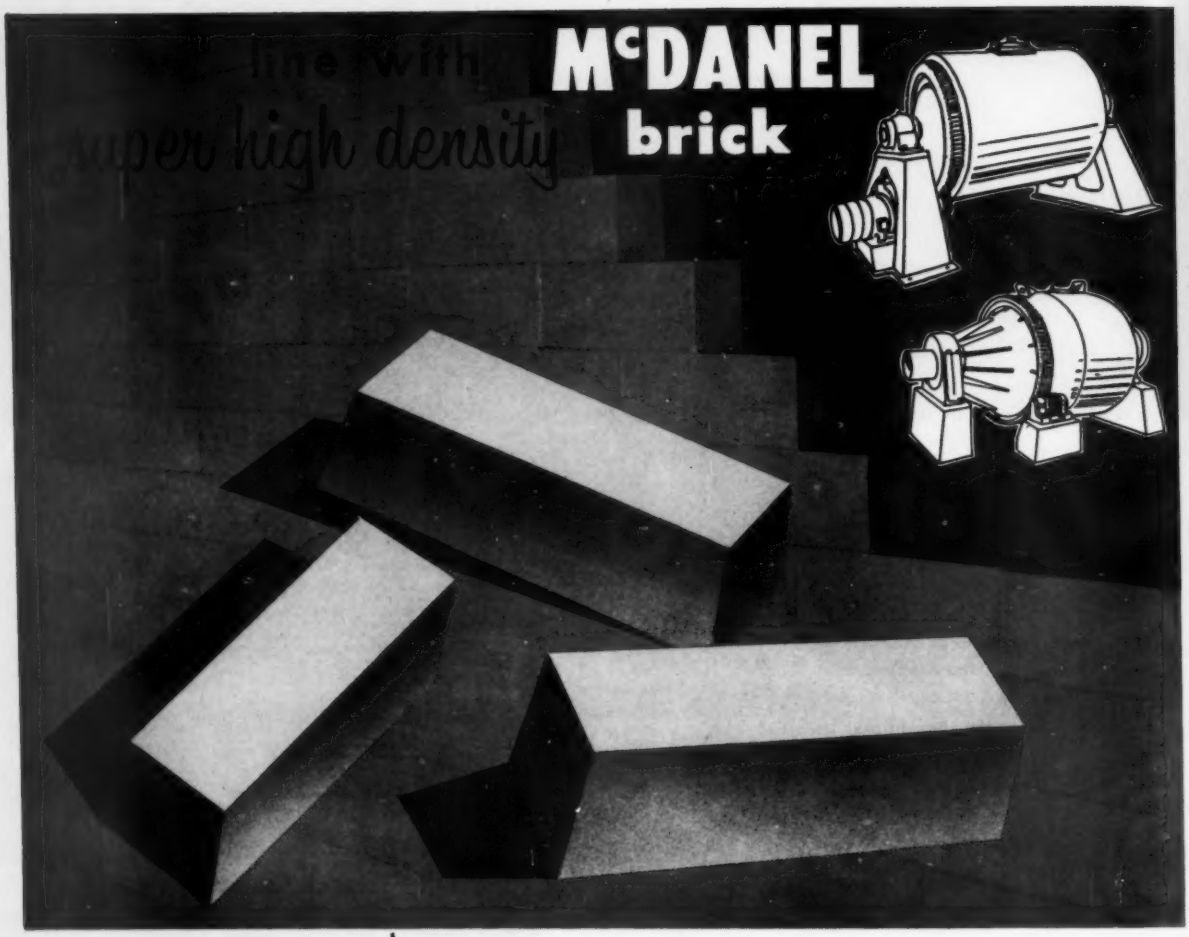
to Page 81 →

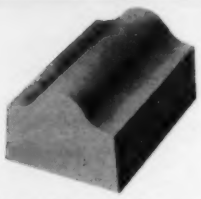
Girl assembles a stainless handle band to the hinged top and handle assembly she holds in left hand. She starts two internally threaded stainless screws.

Next the assembly goes to a fixture that holds the handle band tight. Here, two conventional stainless screws are driven home by a power screwdriver.

Completed coffee brewers are given an inspection, a wipe, and a belt conveyor ride to the packaging and shipping department.

Left: The inside of pans are hand polished on a rotating fixture with 80 grit emery cloth.





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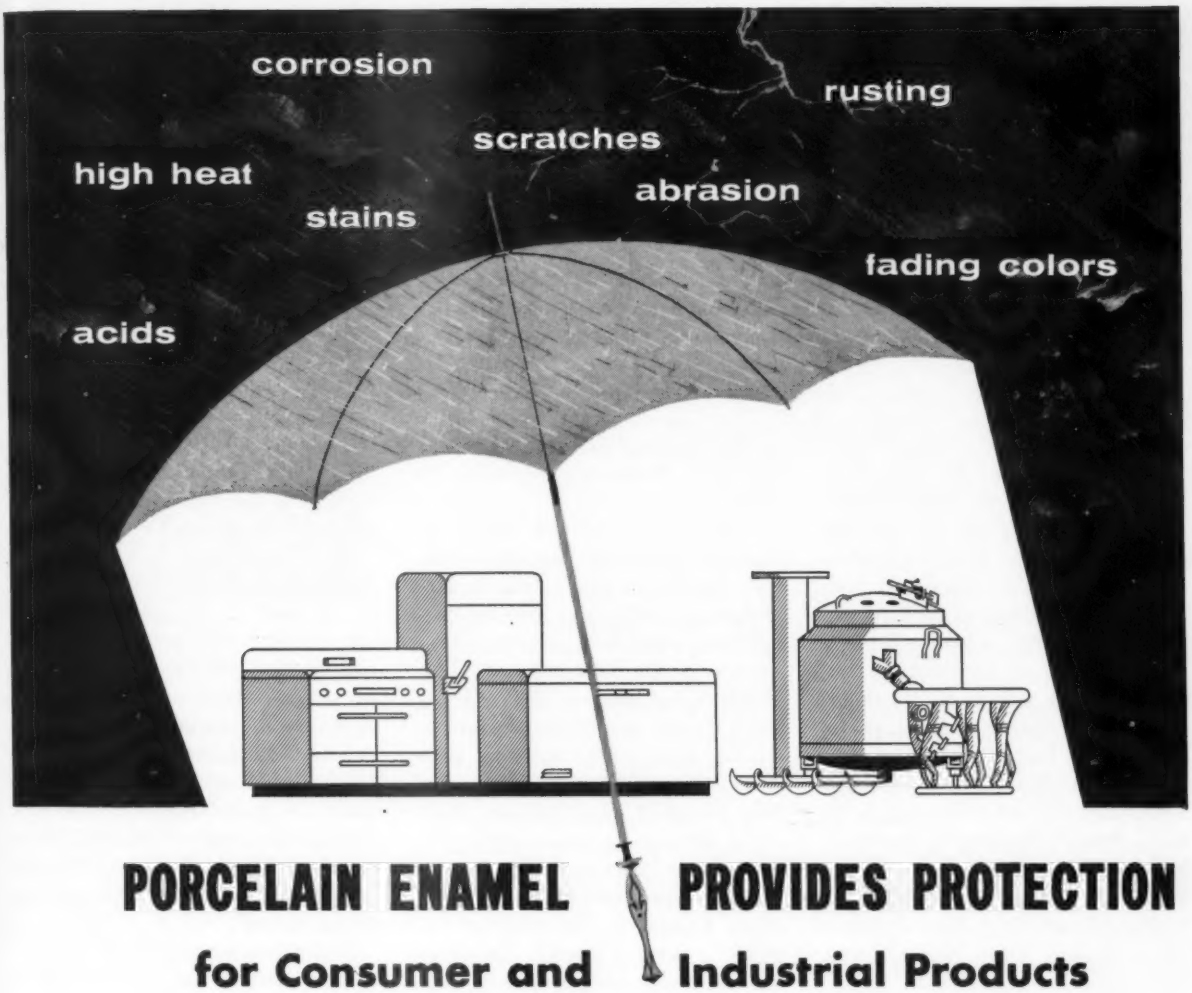

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Porcelain Enamel Institute holds 23rd annual meeting

industry leaders point way to increased business — Hutt elected president

illustrated with finishfotos

AT THE Porcelain Enamel Institute's 23rd annual meeting at the Greenbrier, White Sulphur Springs, W. Va., September 29, 30, and October 1, Glenn A. Hutt, vice president of Ferro Corp., Cleveland, Ohio, was elected president of the Institute.

Other industry representatives elected officers of the Porcelain Enamel Institute are: J. E. Bourland, Texlite, Inc., Dallas; J. L. Hodgkinson, U. S. Porcelain Enamel Co., Los Angeles; D. H. Malcom, Armco Steel Corp., Middletown, Ohio; H. McE. Patton, Ingram-Richardson Mfg. Co., Beaver Falls, Pa.; R. N. Smith, Temco, Inc., Nashville; Y. C. Smith, Alliance-Ware, Inc., Alliance, Ohio; Herbert Turk, Pemco Corp., Baltimore, as vice presidents.

P. B. McBride, Porcelain Metals Corp. of Louisville, was re-elected treasurer. W. A. Barrows, Barrows Porcelain Enamel Co., Cincinnati, as immediate past president, remains on the Executive Committee. Edward Mackasek and John C. Oliver, both of Washington, D. C., were re-elected managing director and secretary, respectively.

New president Hutt succeeds W. A. Barrows, president, Barrows Porcelain Enamel Co., Cincinnati. Accomplishments within the industry that had taken place during Barrows' two-year term of office were cited as: Membership increase of 10%; a meeting of Eastern and Western enamelers on the West Coast; a major Safe Transit Committee meeting; establishment of regular Midyear Divisional meetings; a major meeting in Washington of over 200 architects, engineers and others to discuss "Porcelain Enamel in the Building Industry"; and expanded divisional Market Development programs.

Top notch speakers on programs

A group of outstanding industry speakers were featured on the annual meeting program.

D. H. Malcom of Armco Steel Corp., a newly elected vice president of PEI, presented a challenging message, "Our Target for Tomorrow". Malcom is also chairman of the PEI Market Development Committee.

Informative speakers in another session were these industrial authorities: Bennett S. Chapple, Jr., assistant executive vice president — commercial, U. S. Steel Corp., who spoke on "A Look Ahead"; Leroy E. Kiefer, chief product designer, styling section, General Motors Corp., discussed "Designing Tomorrow's Appliances"; and G. A. Baehr, supervisor, plumbing fixtures, Sears, Roebuck & Co., talked on "Responsibilities of Plumbing Fixture Manufacturers in the Period Ahead".

In the final business session, Hugh McE. Patton of Ingram-Richardson Mfg. Co., speaking as PEI Sign Division chairman, outlined and reported on the Division's six point program for "Building Better Sign Markets".

While porcelain enamel on aluminum has largely been used in architectural applications thus far, report-

General session speakers were, left to right: G. A. Baehr, Sears-Roebuck; Leroy E. Kiefer, General Motors; Bennett S. Chapple, Jr., U.S. Steel; Hugh McE. Patton, Ing-Rich; William B. Tabler, Statler Hotels; and J. R. Leary, Alcoa.

Glenn A. Hutt has a background of many years of experience in the porcelain enameling industry. He was graduated from Ohio State University in 1930 with the degree of Bachelor of Ceramic Engineering. He then entered the employ of Frigidaire Division, General Motors Corp., Dayton, Ohio, then the largest plant of its kind in the world, as a ceramic engineer, first spending one year in the company's Special Executive Training Course. He joined Ferro Corporation in 1934 as a service engineer. Hutt was sent to Australia in 1935 as director for the company's branch plant in Sydney, Australia; was recalled to the United States in 1940 to become assistant sales manager. The appointment of general sales manager came in 1946 and of assistant to the president in 1949. He was made vice president in July 1951. During the years 1942-1945, Mr. Hutt served in the Chemical Warfare Branch of the United States Army, receiving his discharge as a Captain. He was recently named a vice president of the Armed Forces Chemical Association and will head the War Mobilization Section of the organization (see *finish*, October 1954).

ed J. R. Leary, of Aluminum Company of America, "There are, however, many fields where Porcelain Enameled aluminum is catching hold. We see such items as signs and labels, electric shielding, appliances, hardware and trim, dials and instruments, lighting fixtures, furniture, sanitary ware and transportation equipment".

The newly opened Statler Hotel in Hartford, Conn. has curtain walls of porcelain enamel in its exterior. This, and other factors of "Porcelain Enamel in Hotel Design" were pointed out by William B. Tabler, architect, Statler Hotels, as he discussed one of the material's newer, but expanding, uses.

Reports on projects, current business and plans for the future received attention in each of the Institute's individual meetings. Divisions holding meetings were the Sign, Architectural, Steel Plumbing Fixtures, Color Manufacturers, Frit Manufacturers and General Enameling Divisions.

What they said — in brief

Bennett S. Chapple, Jr. told PEI members that there are indications of "a horizontal movement in our economy for the next twelve to fifteen months". Industrial production has leveled off at less than 10% below the peak of 1953, and 1955 is expected to be somewhat ahead of 1954.

The steel industry's production is currently at 70% of capacity, he said, but total tonnage for the year 1954 will compare very favorably with previous years. Steel in the pipelines (inventories) has been radically reduced — by 4½ to 5 million tons — to a very low level.

Chapple predicted, too, that appliance industry business in 1955 could be expected to be about the same as in 1954. He said, "In 1955, production of the old-line, standard appliances may decline from their 1954 level, however, increases in the production of newer appliances, such as clothes dryers and automatic washers, are quite likely to provide an offset."

One big chance for the future lies in the construction industry. 400,000 tons per year "could" go to curtain wall type construction.

Leroy E. Kiefer, in his talk "Designing Tomorrow's Appliances", outlined five factors which are considered when starting the design of tomorrow's product: The past or traditional way of doing things; a survey of the likes and dislikes of today's users of the product; the developing pattern of today's living; decline in the use of extra help, and new engineering principles.

600 people in the G. M. design section are "in the business of creating dissatisfaction". 70 are in the group responsible for appliance design and related activities.

G. A. Baehr told the porcelain enameling people that they could "eliminate the peaks and valleys" in their sales curve with intelligent merchandising plans. He urged strong advertising and promotion in the appliance and plumbing fixture industries, both at the factory level and at the retail level.

Baehr listed 5 stimulating factors for business:

1. Demand stimulated by the exercise of creative ability, followed by promotional activities.

2. The increase in population, and particularly the increase in the number of families.

3. Increased income and with it more dollars to spend.

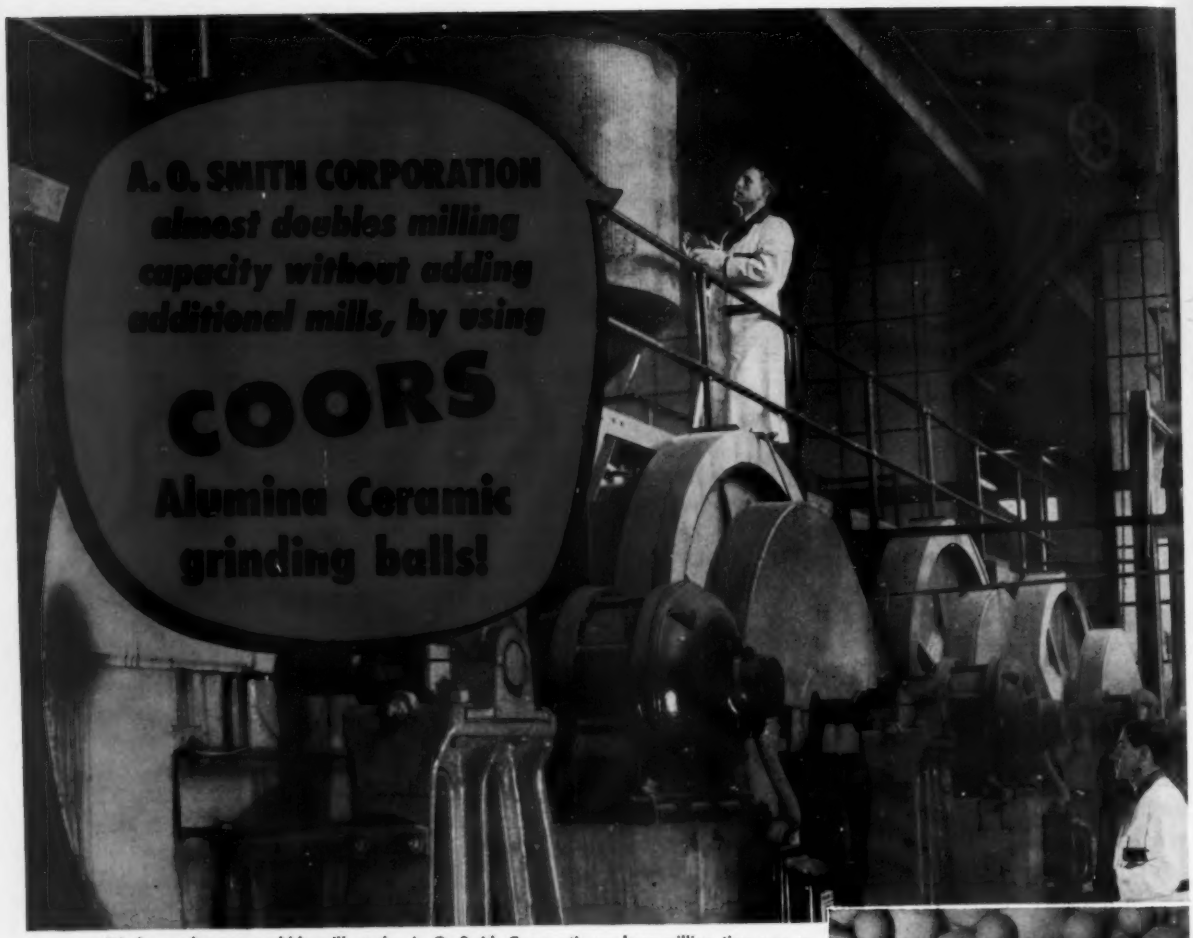
4. An increase of 141% in the number of farm homes that are wired.

5. The 10,401,000 new non-farm permanent dwelling units created during the years 1940 to 1953 inclusive.

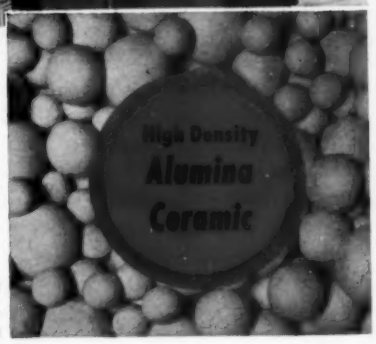
In his talk, Baehr paid specific tribute to the National Safe Transit Program "that has done so much for all of us." *(This program was initiated by* finish, *and is sponsored by the PEI.)*

John R. Leary made the statement that "Aluminum in Architecture" and "Porcelain Enamel" go together like bacon and eggs.

"Alcoa is well aware of the impact possible in the architectural field through the use of porcelain enamel", said Leary. "We are conscious of the possibilities of porcelain enamel in fields other than architecture." →



Workmen charge a pebble mill at the A. O. Smith Corporation—where milling time was reduced 46%—from 5,800 revolutions to 3,100 by using Coors Alumina Ceramic Grinding Balls.



The use of Coors High Density Grinding Balls, according to actual experience in enameling plants, will produce these results:

1. **Permit you to obtain greater output per mill.**
2. **Reduce cost of balls because of much lower ball loss due to wear.**
3. **Increase the life of your porcelain mill linings when mills are properly charged.**

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"We find that to produce the proper fineness, 3,100 revolutions per batch are required with your Alumina Balls [in a 5'x6' mill]. With the previously used balls, 5,800 revolutions were required for the same fineness, or nearly twice the time requirement.

"This improvement in grinding cycle time means that we can almost double our productive capacity without adding additional mills. Besides the cost and difficulty of obtaining new mills, the floor space saving effected for increasing the capacity is often important...

"...31 batches of glass-lined slip have been ground in this mill with no additional [Coors Alumina] balls being added for wear. Our previous records reveal that with conventional balls, we were having to add 12 pounds of balls per charge for ball loss during each cycle of grinding."

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National sales representatives...LEP Industrial Ceramics, 2360 West 7th Ave., Denver 4, Colorado

Sole Agent for the Enameling Industry...East of the Rocky Mountains: Chicago Vitreous Enamel Product Co., 1427 South 55th Court, Cicero 50, Illinois.

California sales representatives...Melvin L. Jontz Company, 5028 Alhambra Ave., Los Angeles 32, California.

PEI board members — Back row (left to right): E. M. Hommel, Hommel; R. N. Smith, Temco; W. H. Lowry, Vitreous Steel; W. N. Noble, Ferro; Burton Longwell, Republic Steel; Herbert Turk, Pemco; M. D. O'Leary, Chicago Vit; H. A. Ringelberg, Challenge Stamping; Center row: J. J. Boehler, Heintz; P. B. McBride, Porcelain Metals; Y. C. Smith, AllianceWare; D. H. Malcom, Armco Steel; Glenn Hutt, Ferro; H. McE. Patton, Ing-Rich; J. E. Bourland, Texlite; D. C. Harris, Porcelain Steel; Front row: Edw. Mackasek, PEI managing director; W. F. Wenning, Ceramic Color; John Oliver, PEI secretary; W. A. Barrows, Barrows Porcelain; A. B. Shaver, Bettinger.

In stating his company's stand relative to porcelain enamel he said: "Many statements have been made that we at Alcoa are moving slowly as far as porcelain enameling on aluminum is concerned. Let me first restate Alcoa's position in the aluminum industry. We are *primarily* a producer of metal and semi-finished mill products. We are not in the business of vitreous enameling of aluminum. But, being in the business of selling aluminum, we are ever alert to anything which will promote its sale. Over the long haul, we would rather be a little late seeing aluminum in a new field than to jump the gun and have our favorite metal lose out." . . .

"We have just created at our main Research Laboratory at New Kensington, Pennsylvania, a team of men who will devote 100% of its time to both fundamental research and the practical and economic problems in connection with the subject of porcelain enamel on aluminum. This team has already found considerable work still to be done in the processing and testing areas. They will proceed cautiously. It is a case of making haste slowly — to the end — that you, our customer, are not let down a long road of no return. We would thoroughly dislike seeing a costly error made in your plant because of conclusions reached with insufficient evidence."

In discussing "Target for Tomorrow", D. H. Malcom pointed to progress and *changes* in the industry picture.

PEI had 57 members in 1940, and 120 in 1953.

Most important division in 1940 was the Table Top Division — a market now practically gone.

In 1940, 11 companies produced range and refrigerator parts primarily. Today the manufacturers make their own.

to Page 84 →

Left: Edw. Mackasek, managing director, displays camera, a gift from PEI members, as a token of appreciation for his eleven years of service. To his left is Mrs. W. A. Barrows.

Right: W. A. Barrows, retiring president, accepts one of the gifts from the membership with presentation being made by R. H. Turk, of Pemco, who was president from 1944-47.

FOR FINEST FRIT • CHICAGO VIT

Chicago Vit

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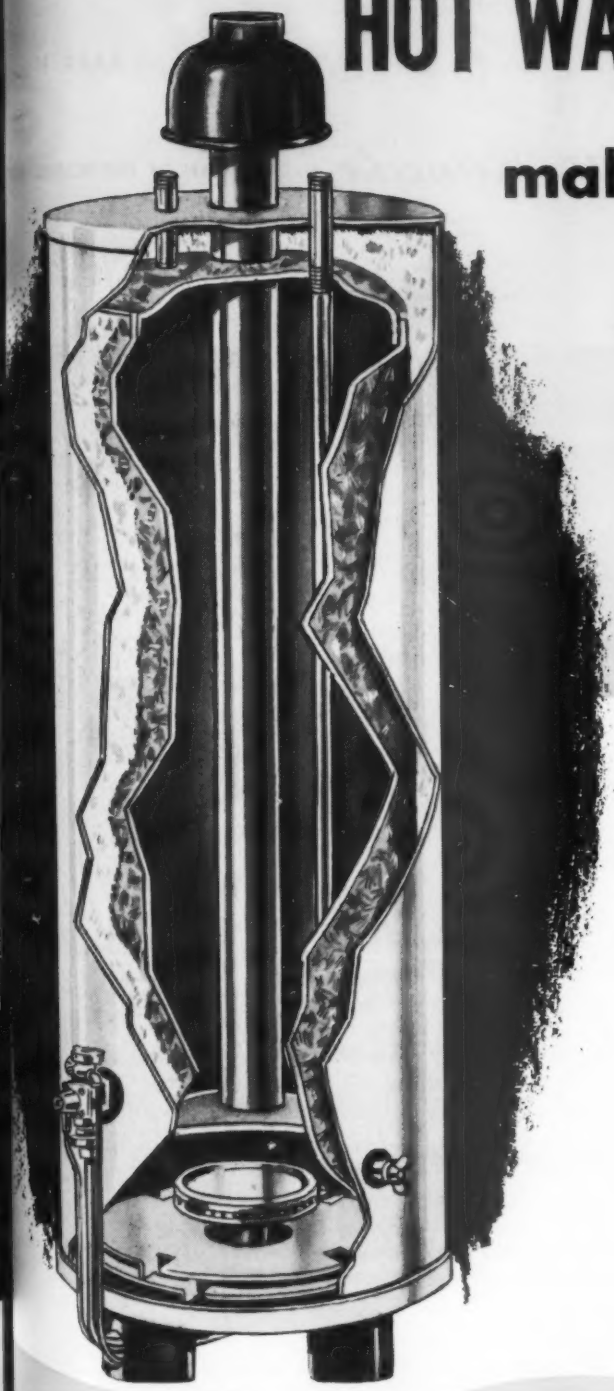
make your Water Heaters



✻ easier to produce!

✻ easier to sell!

Today Chicago Vit hot water tank enamels make it possible for you to produce tanks for hot water heaters that give the home owner more product value for his money. Through a concentrated research program Chicago Vit has developed special enamels which, due to their outstanding over-all chemical durability, are designed to resist the attack of highly corrosive waters. Chicago Vit hot water tank enamels are easy to handle in production, and even more important, they make your water heaters easier to sell! You would be wise to get all the facts about hot water tank enamels from Chicago Vit engineers. Just call your nearest Chicago Vit representative or contact us direct.

Chicago Vitreous CORPORATION

1425 South 55th Court, Cicero 50, Illinois

Industrial designers are breaki co

PART II

by Jean Otis Reinecke • CHAIRMAN OF THE BOARD, SOCIAL DE

A radical deviation from the whiteness of the refrigerator of the past is the International Harvester unit which was designed by Dave Chapman in cooperation with the staff of IH's refrigeration division.

ki color barrier

II

D, SOCIAL DESIGNERS

Harvester's new approach to the decorative treatment for refrigerators can also be adapted for other home products, such as the room air conditioner shown on the left.

Exclusive feature finish

The astute industrial designer must look to the market studies for an indication of the consumer color preferences he must follow. Consumers expect certain products to be made in certain colors and these are strong habit preferences. But color habits do change and many color preferences are based on unwarranted foundations in the first place. The color foundation of a line should be based on consumer preferences as established by research.

Consumer research is important

Distinctive merchandise or "leaders" may explore the possibilities of new color trends — especially in the higher price field. Many manufacturers have too many colors in their line — some that do not make a profit. Consumer research can establish the colors that sell and thereby help eliminate the ones that do not.

Color specifications is merely the means of assuring that a color selected by careful research can be produced successfully in mass production.

The selection of a color or of a surface coating may partially be dictated by technical requirements. However, there is such a wide choice of these that the designer is usually able to determine whether or not the complete article will have the eye appeal which will lead to greater sales.

Eye appeal does not necessarily mean "flash". The size of the product, its ultimate uses and the nature of the surroundings in which it will be utilized have a decided bearing upon the color, or the degree of brilliance that is desirable or permissible. While the most common error in the use of color today is on the side of conservatism, this is sometimes a boon to the consumer's eye, for the improper, flamboyant use of color can be as irritating as its correct use can be pleasing.

The industrial designer must take many factors into consideration before making the final decision as to the choice of color he is going to use. A large object, he will tell you, usually should be quieter in hue than a smaller one. Whether or not the article is to be used for display purposes is still another factor to be considered.

Often, through the phenomena of optical illusions, color can be responsible for apparent changes that are not physically possible. The world's leading painters have long been cognizant that light-colored objects appear larger than dark colored ones. Interior decorators early learned that red is a more prominent color whereas blue is receding. Shrewd dressmakers throughout the ages have recognized that stripes or patterns may apparently change the wearer's proportions considerably.

Optical illusions apply in appliance design too

These same principles and many others are being applied almost every day by industrial designers in their styling of stoves, washing machines, refrigerators, radios, and various other appliances for the home. Like all other artists, they know the extreme importance of the psychological effect of color. They are also aware that harmony and contrast involving proportional sizes as well as hue, tint, and shade require experience and able handling.

One of the most significant contributions that our scientific progress has made to the advancement of the industrial design profession is the

development of new materials capable of artistic or asthetic expression. For example, today all colors are less fugitive in sunlight and their available range is greater than ever before in our history. Our ever-increasing knowledge of pigments and dyes, synthetic resins and enamels is serving as the gateway to a new era of color.

Some twenty years ago, Henry Ford was quoted as saying, "You can have any color as long as it's black." Today, nine out of every ten automobiles are any color but black. This has been made possible through the development by our scientific men of pigments that are not fugitive. While some colors are today more fugitive than others all colors are far superior to those of only a few short years ago. This scientific accomplishment has greatly stimulated the creative designer of appliances as well as of automobiles and at the same time it has broadened the area of acceptance on the part of the buying public.

Today as never before, the appearance of a product is perhaps the most important factor in the success or failure of any article. This realization is a salient factor in the concession being made by industry that style, as determined by shape and color, is playing an equally important role with engineering in the building of a successful product.

An about-face in buying habits

This hasn't always been the case. It really represents a complete about-face from past experience. Until two decades ago, the primary merits of most commodities were predicated on function and price alone. Modern-day products are concrete indications that manufacturers now realize that beauty has intrinsic sales value and that along with such elements as convenience, utility and function, it must be incorporated into all products.

At one time, not so long ago, style and color were mainly employed in the design of women's wear, but today, it is being applied almost as forcefully to such basic items as refrigerators, radios, enamelware, air conditioners, and other appliances.

The truly advanced designer recognizes the need for beauty and color in household articles. And now he is responding to this need with more and more freedom from the cant and cliche of bad or sterile modern so prevalent during recent years.

Just like the cliquish school of austere modern which liked the stripped-down, clinical look rid our homes of the vulgar, ornate Victorian what-nots and gadgets that had neither use nor integral beauty, it too is being swept into a dusty corner of history.

The modern kitchen is living proof of this current trend to color. For too many years, kitchen appliances and accessories were "gleaming white." White eliminated the need for color inventory or color harmony. But people tired of the hard, cold hospital-like quality of the "gleaming white" kitchen and began to express their desire for a warm, colorful room.

Refrigerators "break the barrier"

The refrigerator industry, whose product is the dominant feature of any kitchen and therefore influences the design of ranges, cooking utensils, dishwashers and other appliances can take the lion's share of the credit for

to Page 83 →

"JUST WHAT ARE YOUR OTHER QUALIFICATIONS FOR A BIG EXECUTIVE POSITION — BESIDES THE FACT THAT YOU'RE MY SON?"

"WOULD YOU MIND FINDING OUT WHO SUBSTITUTED A STICK OF DYNAMITE FOR A CANDLE IN THE BIRTHDAY CAKE THE BOYS GAVE ME?"

PMI's board of directors: Front row (left to right)—R. H. Serrick, Defiance Stamping; E. T. Nolan, Advance Stamping; Bruce Krasberg, R. Krasberg & Sons; C. J. Brunn, Transue & Williams. Second row — J. J. Boehm, Boehm Pressed Steel; H. A. Daschner, PMI assistant manager; Sam Morrison, Morrison Steel Products; O. B. Werntz, PMI managing director; S. P. Hull, Worcester Stamped Metal; Geo. Bady, Belmet Products, Melvin Verson, Verson Allsteel Press; C. E. Stryker, Maysteel Products; R. W. Breckenridge, PMI technical director; Standing — Jean S. Beeman, PMI staff member; W. F. Ardussi, Variety Machine & Stamping.

Metal stampers hold annual meeting

continuation of earlier report presented in October issue

METAL stampers from the United States and Canada met recently at Manoir Richelieu, Murray Bay, Canada, for the 6th annual meeting of the Pressed Metal Institute.

As announced in the October issue, Sam Morrison, president of Morrison Steel Products, Inc., Buffalo, N.Y., was elected president of the Pressed Metal Institute, succeeding Samuel P. Hull, vice president of Worcester Stamped Metal Co., Worcester, Mass.

New PMI vice presidents are J. J. Boehm, president of The Boehm Pressed Steel Co., Cleveland, and C. Glenwood Rose, president of Judson & Rose, Inc., Philadelphia. Bryant Gemmill, treasurer of The American Stamping Co., Cleveland, was elected secretary-treasurer of PMI.

Board of directors

Elected to the Institute's board of directors were the following regular members of PMI:

George Bady, president, Belmet Products, Inc., Brooklyn; R. W. Blackman, president, Blackman Stamping & Mfg. Co., Los Angeles; J. J. Boehm, president, The Boehm Pressed Steel Co., Cleveland; C. J. Brunn, manager of sales, stamping division, Transue & Williams Steel Forging Corp., Alliance, Ohio.

L. G. Castelli, president, Castelli Bros., Inc., Philadelphia; L. E. Dail, president and general manager, Dail Steel Products Co., Lansing, Mich.; Ray Howland, treasurer, Eastern Tool & Stamping Co., Inc., Saugus, Mass.; J. B. Kendall, manager, stamping plant, Ford Motor Co., Buffalo, N.Y.

John King, Worcester Pressed Steel Co., Worcester, Mass.; J. W. Kootz, manager, stamping department, S. W. Evans & Son, Philadelphia; Bruce Krasberg, president, R. Krasberg & Sons Mfg. Co., Chicago; E. T. Nolan, president, Advance Stamping Co., Detroit.

R. H. Serrick, general manager, The Defiance Stamping Co., Defiance, Ohio; C. E. Stryker, president, Maysteel Products, Inc., Milwaukee; and Wilfred Williams, president, Midwest Stamping & Mfg. Co., Bowling Green, Ohio.

Elected to the board of directors by the associate members of the Institute were:

Frank Humberger, president, Technical Metal Processing, Inc., Cleveland; George

Two long-time members of the stamping industry attended the annual meeting. They were G. F. Conway (left), of Lansing Stamping, and H. S. Johnson, of Metal Specialty. Conway was a member of the first Pressed Metal Institute formed in 1916, and Johnson was the first vice president of the Pressed Metal Association formed in 1920, succeeding the first Pressed Metal Institute. The present organization was formed in 1943.

N. Schramm, assistant to the director of market development; U. S. Steel Corp., Pittsburgh; and Melvin Verson, executive assistant, Verson Allsteel Press Co., Chicago.

Program highlights

The business sessions included an address by F. C. Grenhill, president, Acklin Stamping Co., Toledo; on the improvements in British metal stamping plants as the result of their 1950 visit to the American stamping industry.

Carter C. Higgins, president, Worcester Pressed Steel Co., Worcester, Mass., addressed the PMI delegates in attendance on "Turning the Tide", a thought-provoking discussion of ways and means of utilizing the jobbing stamping industry to its highest potentials.

A panel discussion sparked by H. A. Daschner, PMI assistant manager, was held on the subject of "Merchandising Stampings."

Award presentations

The entertainment program contained a variety of indoor and outdoor activities and was climaxed by the annual banquet.

AT PMI banquet table — C. C. Higgins, Worcester Pressed Steel; Mrs. and Sam Morrison (PMI president), Morrison Steel Products; Mr. and Mrs. W. F. Ardussi, Variety Machine & Stamping.

Highlights of the banquet included the presentation of PMI's Merit Certificates, Safety Awards, and the Presteel Award (see Page 84, October 1954 *finish* for award winners). It is noteworthy that of the 10 companies receiving PMI's first Safety Awards, 8 had perfect safety records.

Safety awards went to the following firms: American Metalcraft Co., Waterville, Ohio; The Budd Company, Philadelphia; Griffith-Hope Co., Milwaukee; Johnson-Claflin Corp., Marlboro, Mass.; Kickhaefer Mfg. Co., Milwaukee; Kolk Mfg. Co., Buffalo, N.Y.; The Stanley Works, New Britain, Conn.; Sylvania Electric Products, Inc., Wheeling, W.Va.; Transue & Williams Steel Forging Corp., Alliance, Ohio; and Worcester Pressed Steel Co., Worcester, Mass.

1955 technical meeting

At a meeting of the Technical Research and Standards Committee, subjects were selected for PMI's 6th annual Spring Technical Meeting to be held at Hotel Carter, Cleveland, Ohio, March 16-18, 1955.

Clockwise — Mrs. and F. Rimmler, Volkert; Mrs. and F. J. Sehn, Sahlin; Mrs. and P. C. Wood; Acklin; Mrs. and Ray Peterson; Peterson Engr.; Mrs. and Robert Barth, Barth.

PMI members studying catalogs and brochures of other member companies used to illustrate panel discussion on "Merchandising Stampings." Seated at table is V. G. Yawman, of Yawman Metal Products, chairman of PMI's Committee on Education.

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Silent operation *— of Republic Steel Kitchen doors and drawers is assured through use of insulation. Usually hidden by welded door and drawer construction, the insulation has been brought to light in the demonstration drawer head shown here. Insulation is firmly bonded to the inside of drawer heads in a single layer, and to the inside of doors in double application.*

1st in the APPLIANCE

1st. in Editorial Content

644 pages of editorial material including dozens of exclusive finish features were beamed to the fabricated metal products field during the past year* with appliances as the focal point.

1st. in Advertising Pages

728 pages of advertising carried the sales stories of leading suppliers of materials, equipment, components and services to the field during the past 12 months*. This total is 205 pages ahead of the second publication in the field.

*(October 1953 to September 1954 inclusive.)

- **finish**
  was first (1944) to beam an industrial trade magazine direct to the key personnel of plants manufacturing home appliances.
- **finish**
  was first (1949) to offer a complete editorial service "from raw metal to finished product" to this fast moving section of the "metals" field.
- **finish**
  was first to build a complete publishing organization focused exclusively on the interests of appliance and allied metal products manufacturers - - an organization experienced in the field.
- ***in addition....***
  to blanket coverage of key personnel in the home appliance industry, finish offers a circulation bonus of a broad group of fabricated metal products manufacturing plants - - plants with similar production problems and similar buying interests.

EPA NBP

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

Dana

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EFIELD

This list of typical advertisers in finish shows the advertising balance between materials, equipment, components and services - - - backed by editorial balance.

MATERIALS

STEEL & ALUMINUM

ARMCO STEEL CORP.
GREAT LAKES STEEL
INLAND STEEL COMPANY
JONES & LAUGHLIN STEEL CORP.
REPUBLIC STEEL CORP.
REYNOLDS METALS COMPANY
U. S. STEEL CORP.
YOUNGSTOWN SHEET & TUBE CO.

METAL CLEANERS AND METAL PREPARATION MATERIALS

AMERICAN CHEMICAL PAINT CO.
DETREX CORPORATION
ESSAK STEEL & CHEMICAL CO.
KLEM CHEMICALS, INC.
MACCO PRODUCTS COMPANY
NORTHWEST CHEMICAL CO.
PENNSYLVANIA SALT MFG. CO.
WYANDOTTE CHEMICALS CORP.

OTHER MATERIALS

AMERICAN NICKELOID CO.
ARNO ADHESIVE TAPES, INC.
THE CARBORUNDUM CO.
CERAMIC COLOR & CHEMICAL MFG. CO.
COORS PORCELAIN COMPANY
DOW CORNING CORP.
FERRO CORPORATION
FOOTE MINERAL COMPANY
THE O. HOMMEL COMPANY
INTERNATIONAL NICKEL CO.
MC DANEL REFRACTORY PORCELAIN CO.
MINNESOTA MINING & MANUFACTURING CO.
OREFRACTION, INC.
OWENS-CORNING FIBERGLAS CORP.
THE PATTERSON FOUNDRY & MACHINE CO.
PEMCO CORPORATION
PERMACEL TAPE CORPORATION
ROLLED ALLOYS, INC.
SACKNER PRODUCTS, INC.
D. A. STUART OIL CO.
TITANIUM PIGMENT CORPORATION
THE VITRO MFG. CO.

SERVICES

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V. W. DANIELSON MFG. CO.
DOVER STAMPING COMPANY
GEUDER, PAESCHKE & FREY CO.
THE EFFICIENT TOOL & DIE CO.
HUYCK CONSTRUCTION CO.
INGERSOLL PRODUCTS DIV.
MERCHANDISE MART
MULLINS MFG. CORPORATION
NEW MONARCH MACHINE & STAMPING CO.
NEW PROCESS D-ENAMELING CORP.
SOCIETY OF INDUSTRIAL PACKAGING & MATERIALS HANDLING ENGINEERS
E. E. SOUTHER IRON CO.
VITREOUS STEEL PRODUCTS CO.

EQUIPMENT

ACME STEEL CO.
ASHDEE PRODUCTS, INC.
THE CYRIL BATH COMPANY
BINKS MANUFACTURING CO.
BURDETT MFG. CO.
CINCINNATI CLEANING & FINISHING MACHINERY CO.
CLEARING MACHINE CORP.
CLEVELAND PROCESS CO.
CROWN ENGINEERING & SALES CO.
DESPATCH OVEN CO.
THE DE VILBISS COMPANY
THE FAHRALLOY COMPANY
FEDERAL MACHINE & WELDER CO.
FERRO CORPORATION
FOSTORIA PRESSED STEEL CORP.
GAYNES ENGINEERING CO.
THE IMPACT-O-GRAPH CORP.
THE IMPACT REGISTER CO.
INDUSTRIAL FILTER & PUMP MFG. CO
JENSEN SPECIALTIES, INC.
L.A.B. CORPORATION
LINK-BELT COMPANY
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NARACO
NEWCOMB-DETROIT
NU-MATIC GRINDERS, INC.
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STRUTHERS WELLS CORP.
THE UDYLITE CORPORATION
UNION STEEL PRODUCTS CO.
VERSON ALLSTEEL PRESS CO.
WEAN EQUIPMENT CORP.

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CHICAGO VITREOUS CORP.
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FERRO CORPORATION
THE GLIDDEN COMPANY
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PEMCO CORPORATION
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RINSHED-MASON CO.
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DOVER STAMPING CO.
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FERROD MFG. CO.
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NEW MONARCH MACHINE & STAMPING CO.
NEW PRODUCTS CORP.
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SPERRY RUBBER & PLASTICS CO.
TINNERMAN PRODUCTS, INC.
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TUTTLE & KIFT, INC.
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AMERICAN BOX BOARD CO.
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CAR BLOCKING, INC.
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THE IMPACT-O-GRAPH CORP.
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INTERNATIONAL PAPER CO.
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KIMBERLY-CLARK CORPORATION
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MENASHA WOODEN WARE CORP
MINNESOTA MINING & MFG. CO.
PERMACEL TAPE CORPORATION
RATHBORNE, HAIR & RIDGWAY BOX CO.
RICHARDS-WILCOX MFG. CO.
SACKNER PRODUCTS, INC.
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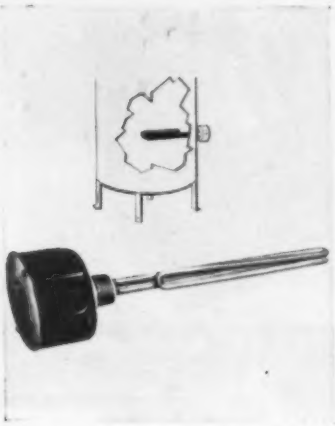
For more information on new supplies, equipment and literature reviewed here, fill out the order form, or write to us on your company stationery.

K-10. One-piece immersion heater for water tanks, laundry equipment

New Thermostatic control and a Corox element have been combined in a one-piece immersion heater designed to convert any domestic water tank up to 110 gal. capacity to automatic electric heating. Corox heaters are also applicable to laundry equipment, steam tanks, etc.



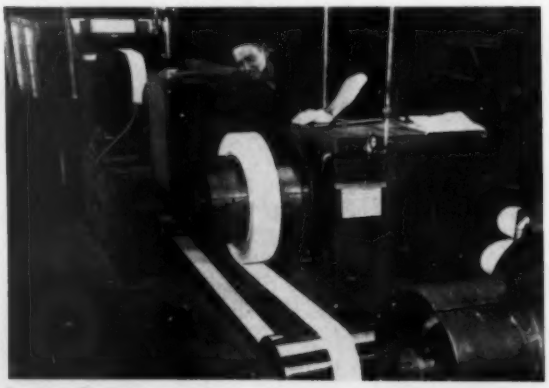
K-11. New motor for shaft-mounted fans, blowers weighs 50% less

New This new totally enclosed fhp motor for shaft-mounted fans and blowers weighs 50% less than previous models. It is available in one- and two-speed single-phase models, and in single-speed polyphase models, with ratings up to ½ hp.

K-12. Pre-coated coils for metal fabricating industry

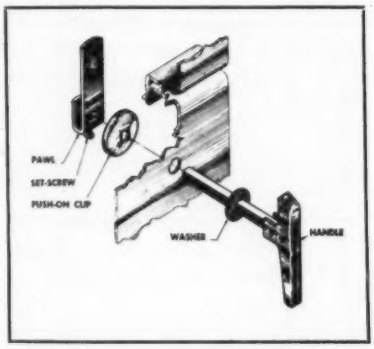
New Coil-Cote, as its name implies, is pre-coated coils of steel or aluminum, available in any choice of color or finish. The new product can be formed, bent, drawn, pierced, and fabricated without the least danger of cracking, peeling or crazing. In the coating process, the applied finish becomes an integral part of the metal itself.

It is also said to be easier on forming dies, as the coating actually acts as a lubricant in fabricating operations.



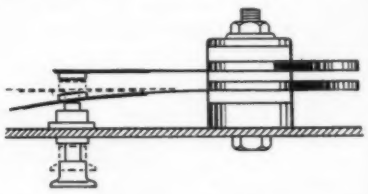
K-13. Latch for appliance & cabinet doors installed in single hole without rivets or special tools

New A new "universal" pawl fastener for all types of doors for appliances and kitchen cabinets is readily fitted to any panel thickness up to 1¾". Pawl is quickly adjustable to frame thickness with a single set-screw. Installation requires drilling only one ¼" hole in the door or panel, inserting and slipping a speed clip over the shaft, and attaching the pawl to the desired grip length. Once hole is drilled, complete assembly and fitting of latch takes *nine seconds*, with a screw-driver the only tool used.



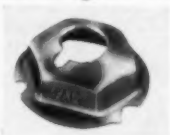
K-14. Tip-over safety switch for heaters, other portable appliances

New A new tip-over safety switch for heaters and other portable appliances can be mounted inside the base of the appliance with a single bolt or rivet. Schematic diagram shows how pin holds contacts closed when appliance is on floor, and how contacts spring open when appliance is overturned.



K-15. Locknut for use in achieving an electrically grounded assembly

New This washer-type locknut with toothlike elements in the flanged base can dig through non-conducting coatings on assemblies where grounding or intimate contact through digging of metal is desired. Free samples are available.



K-16. Family of toggle switches feature compact design

New A family of six new three-position toggle switches have been developed for use in appliances, electronic, aircraft, mobile, or marine applications. The switches have compact design and ability to

make or break circuits in all three toggle lever positions.

K-17. Molded-to-shape glass fiber thermal, acoustical insulation

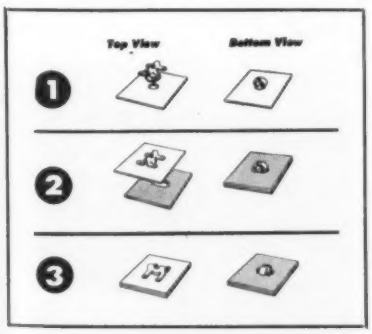
New Manufacturers with assembly-line products—such as refrigerators, air conditioners, dishwashers, clothes dryers, radio and

TV sets, etc. — can obtain glass fiber insulation molded to fit regular and irregular surfaces.

Ultrafine parts, for products requiring thermal or acoustical insulation or padding, can be molded in any size up to 8′ x 10′, in densities varying from 2 to 10 lbs. per cu. ft., and thicknesses varying from 1/8″ up, depending on density. Firmness and rigidity increase with density. Upper temperature limit is 350° F.

K-18. Fastener cuts costs 80% on quarter-turn fastenings

New This new one-piece, one-quarter turn fastener, that resists severe and prolonged vibration, costs only a fifth as much as



some other quick-operating fasteners. The new Q-4 fastener, applied from one side only, is well adapted to "take-up" in commercial sheet metal tolerances. Once snapped in place, the fastener is self-retaining in the outer sheet or panel.

K-19. Sound deadener gives light metal products a "solid" feeling

New A new sound deadener permits manufacturers of light metal products to give their equipment a heavy "solid" feeling, with

sound hushing ability. Applied by wipe-on or spray equipment, the sound deadener can be baked at temperatures as high as 325° F. without loss of bond, blistering, flow, or any striking through of the finish.

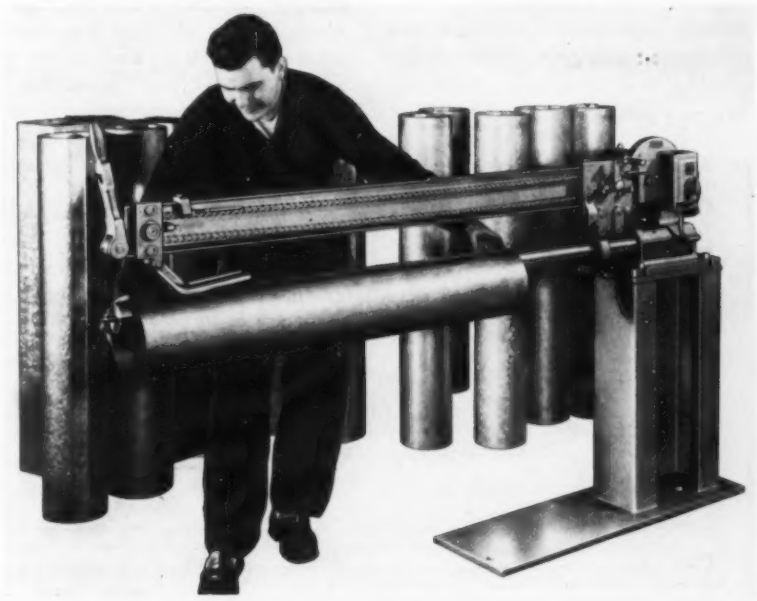
K-21. "Fasteners with a handle" available in coils or strips

New These new tandem-type fasteners are easy to position and draw down. Produced in coil or strip form with a partial shear be-

tween each nut, these "fasteners with a handle" eliminate production line slowdowns due to dropped or misplaced parts. They are interchangeable with 6-8-10 and 14Z screws.

K-20. Power groover closes both single and Pittsburgh lock seams

New With interchangeable horns and rolls, this new power groover is said to be the first machine built for closing both single lock and Pittsburgh lock seams. With a nominal working length of 48″, the power-driven groover is equipped with adjustable stops to hold work stationary on the horn. Rolls are mounted in swinging cradles to permit front roll engagement on outstroke and rear roll engagement on return. Adjusting wheels enable close regulation of roll pressure to conform with thickness of material.



New Industrial Literature

116. Selector folder for both cutting and grinding fluids

New This new selector folder contains pertinent information on cutting and grinding fluids, for use in metal working plants.

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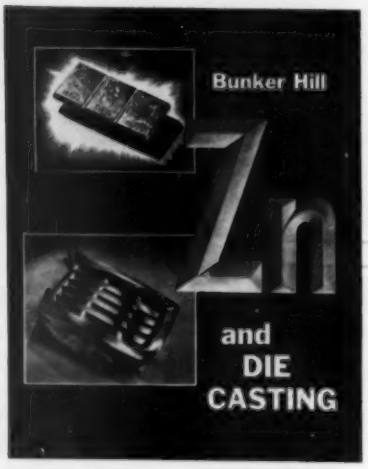
117. Zinc and die casting booklet

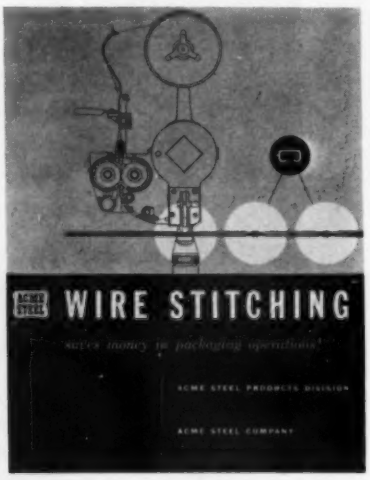
New Contained in this illustrated 24-page booklet is technical data on the role of zinc as a base metal for die casting alloys, plus the



variety of commercial finishes which may be applied to zinc base die castings and the applications of such castings in appliance and other mass production industries. The booklet also discusses advantages of die casting as a production method.

118. Catalog on wire stitching

New This new catalog, on the subject of wire stitching corrugated and solid fibre boxes and the machines used in this fastening



process, discusses advantages of wire stitching assembly and closure methods. Different types of box stiching operations are illustrated.

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119. Catalog, price list on heating elements for electric appliances

New A new catalog and price list covers Nykelkrom replacement heating elements for electric appliances, such as toasters, percolators, hot plates, irons, room heaters, ranges and clothes dryers.

120. Pallet-Stak brochure

New This brochure describes the Pallet-Stak, a new unit designed for low cost expansion of storage space without the necessity

of adding storage facilities. The unit protects the materials on the pallet—making it possible to support a load stacked "sky high". It may be quickly removed when the pallet and material are to be shipped as a unit. The Pallet-Stak merely "clips" on to the pallet in such a way to prevent it from coming loose while in use.

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121. Finishing systems brochure

New This brochure outlines important features to look for when purchasing finishing systems for baking and drying, and includes six case histories showing how manufacturers have solved their finishing problems.

FINISH
York Street at Park Avenue
Elmhurst, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

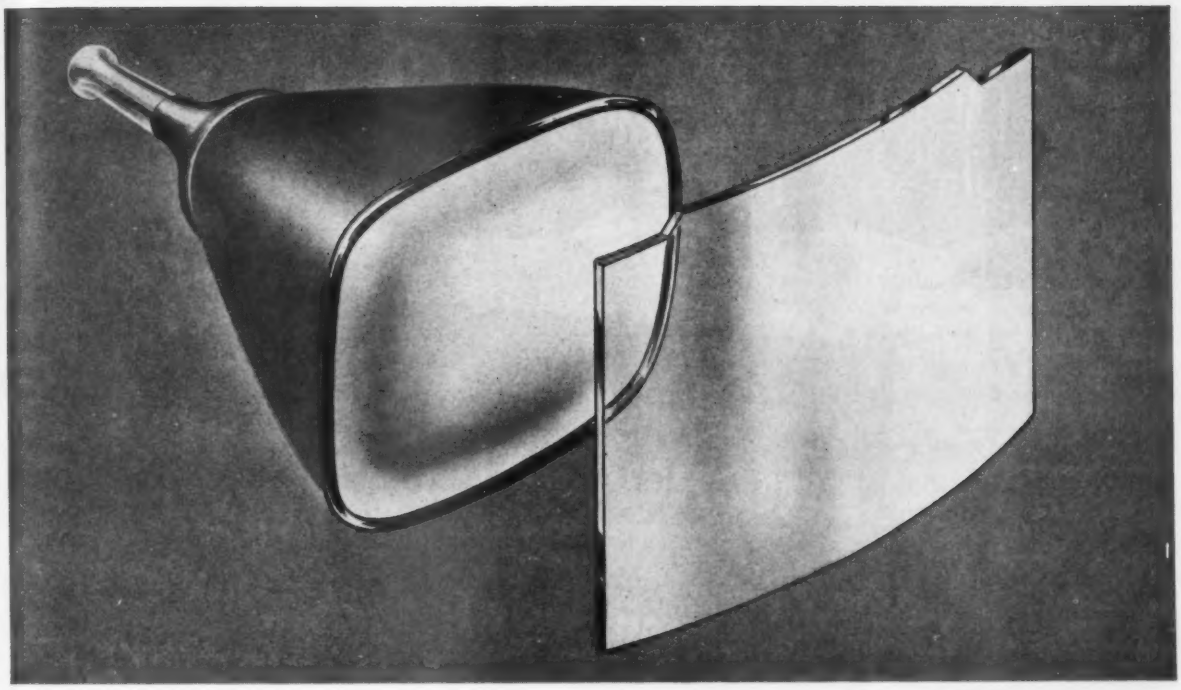
No.____ No.____ No.____ No.____
No.____ No.____ No.____ No.____

Name ____ Title ____

Company ____

Company Address ____

City ____ Zone____ State ____



MARSCO

precision glass parts

FOR UTILITY AND BEAUTY

Glass — enhances the beauty and broadens the acceptance of your product whether in the utility appliance field or the growing electronic industry.

Glass — adapted with skill and precision by MARSCO to meet your product requirements — For Today — For Tomorrow.

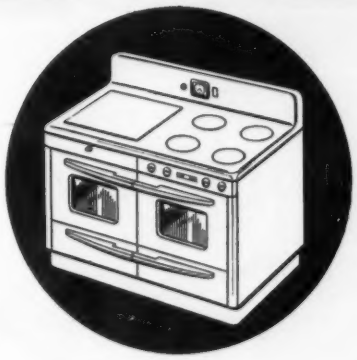
Glass — flat as can be — precisely shaped to fit.

Glass — bent — convex — drilled — to the most exacting tolerance.

Glass — hardened, heat-treated or tempered to survive your consumer usage unscathed.

Join the major appliance manufacturers now enjoying extra sales from the appeal and prestige contributed thru the luster of glass — MARSCO'S Crystal Clear Glass.

Our engineers are experienced in incorporating glass as viewing windows in domestic appliances and television cabinets.
A simple request to us solves your problem.



Bent Glass

Convex Glass

Heat-treated Glass

Marsco

MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.

PERFECTION'S BLACKBURN DIES

Chester A. Blackburn, former vice president and director of manufacturing for Perfection Stove Co., died September 12, at Dunedin, Fla., where he made his home since his retirement in 1951. He had been associated with Perfection for 33 years.

AMANA ADDS SATURDAY SHIFT TO MEET DEMAND FOR FREEZERS

Amana Refrigeration, Inc., Amana, Iowa, has added a full Saturday shift to meet heavy consumer demand for freezers. In addition, the plant's overall labor force is being increased by about 17 per cent. These moves are designed to boost production 25 per cent.

PERMAGLAS UPS FRIEND, HIGGINS, TEGLER, FLINT

Four assignments within the Permaglas Division of the A. O. Smith Corp., Kankakee, Ill., have been announced by G. P. Hough, general manager.

R. E. Friend has been promoted to assistant manager. W. W. Higgins has been designated as director of engineering, with L. T. Tegler as chief engineer of water heaters and K. H. Flint as chief engineer of heating products.

MULLINS MFG. TO ERECT ADDITION

Erection of a 105,000 sq. ft. warehouse addition for storage of Youngstown Kitchens equipment at Mullins Mfg. Corp.'s Warren, Ohio, plant has been announced by H. M. Heckathorn, president.

Approximate cost, including building and equipment, is $750,000. Occupancy is expected early next year.

BENDIX NAMES OLES PROJECT ENGINEER

Joseph F. Oles has been named project engineer for the Bendix washer division, according to D. M. Strathearn, director of engineering, Bendix Home Appliances Division, Avco Mfg. Corp.

Oles had been the manager of research and development for Thor Corp., Chicago.

AHLMA EXECUTIVE COMMITTEE ELECTS SORENSEN, GROSHANS

The American Home Laundry Manufacturers' Association has announced the election of E. J. Sorensen, manager, home laundry sales

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***European appliance manufacturers**—recently visited The Tappan Stove Company plant, Mansfield, Ohio, as part of their study of American production and distribution methods in the domestic cooking and heating appliance field. Sponsored by the U.S. Government's Foreign Operations Administration as part of its technical exchange program, the team of owners, managers, and engineers of European appliance firms are seeking methods and techniques which could be adapted in their countries to increase production of modern low-cost appliances and to stimulate consumer demand. W. R. Tappan, right, Tappan vice president, welcomed the visitors who represented firms from 10 countries in Europe.*

planning, Hotpoint Co., Chicago, and Joseph Groshans, general sales manager, ironer division, Speed Queen Corp., Algonquin, Ill., as members of the organization's executive committee.

RUCKS, RUDOLPH TO KEY POSTS AT U.S. STEEL HOMES

H. D. Moulton, president of United States Steel Homes, Inc., the housing subsidiary of U. S. Steel Corp., has announced the election of two new vice presidents, H. W. Rudolph, vice president of engineering and operations, and David F. Rucks, Jr., vice president of sales.

COLEMAN ADVANCES SCHUL, EASLEY AND OEHLERT

The Coleman Company, Inc., Wichita, Kansas, has advanced John H Schul from the position of general purchasing agent to the newly created post of director of material.

A. F. Easley, assistant purchasing agent, has been advanced to production control manager, and Wilbur R. Oehlert, formerly assistant to Schul, has been promoted to purchasing agent.

AVCO NAMES ERICKSEN TO NEW EXECUTIVE POST

Appointment of Parker H. Ericksen to newly created post of executive

vice president of the Crosley and Bendix Home Appliance Divisions, Avco Mfg. Corp., was announced by James D. Shouse, Avco vice president, and general manager of the two divisions.

Ericksen has been associated with the firm for more than 20 years in both production and sales capacities.

BOERICKE TO KAISER STAINLESS STEEL PROJECT POST

Kaiser Metal Products, Bristol, Pa., has announced that J. J. Boericke, formerly a contract manager, will head the newly formed stainless steel project group which will handle contracts involving the production of stainless steel items.

DEMAND FOR RADIANT HEATERS SPEEDS THERMORAY EXPANSION

ThermoRay Corp., manufacturer of radiant electric wall heaters, is moving into larger quarters on South Buckhout St., Irvington-on-Hudson, New York. The larger facilities will provide greater production capacity and make possible an expanded research and development program,

reported Herbert J. Harris, president, who added "We've been forced to expand a little sooner than we expected. Orders and inquiries have been arriving at such a rate that our present facilities (in New York City) are beginning to be overburdened."

SMITH HEADS RCA ESTATE NEW MARKETING DEPARTMENT

A marketing department has been created within the RCA Estate Appliance Corp., Hamilton, Ohio.

Inwood Smith, formerly vice president in charge of sales, has been named vice president of the newly created department, which will encompass all activities affecting the salability of the company's kitchen range products.

Gordon P. Hentz has been appointed manager, product planning; Thomas F. Bartley, merchandise manager; Robert W. Schroeder, manager, sales administration.

MALLONN, ENAMEL WARE INDUSTRY PIONEER, DIES

Paul A. Mallonn, considered to be one of the pioneers of the enameled ware industry in the United States, died in South Canton, Ohio, October 4.

A native of Germany, he arrived in the United States in 1888 when he was 14 years old. In 1890, he entered the employ of New England Enameling Co., Middletown, Conn., one of the first American firms to manufacture enameled kitchen utensils.

At the turn of the century he associated himself with the newly-formed

Republic Stamping and Enameling Co., where he was enamel superintendent until his retirement in 1952.

Mallonn worked with the Ceramic Departments at the University of Illinois and Ohio State University in a joint research program sponsored by the Enameled Utensil Manufacturers Association. He was also a member of the Enamel Division of the American Ceramic Society and the Central District Enamelers Club.

LATEST WELDING DEVELOPMENTS TO BE DISCUSSED AT AWS FALL MEETING

Reports on the latest advances in welding and its uses will be featured at the national fall meeting of the American Welding Society, in Chicago, November 1-5. Fifty-seven papers covering all phases of welding activity will be presented in the 19 sessions to be held at the Sherman Hotel.

Some 1500 welding and production engineers, designers, technical management personnel and others interested in welding are expected to attend. They will hear papers by top authorities on the welding of titanium, zirconium and molybdenum, the use of welding in the production of aircraft and rockets, welding high temperature materials, inert-gas-shielded arc welding, resistance welding, and fused metallized coatings.

Other papers will cover the relatively new "contact" type of electrodes, latest methods of hard surfacing, new developments in arc and oxygen cutting of metals, and recent advances in copper and silver brazing.

There will also be sessions on welding pressure vessels and piping, weldability, structural welding, flame descaling, and welding in design and production.

A highlight of the technical sessions will be the Adams Lecture to be presented by William L. Warner, of Watertown Arsenal. His subject will be "The Toughness of Weldability". At this "honors session" a number of other prize awards will be presented to individuals for outstanding contributions to the advance of welding.

"KAISER FLEETWINGS"

S. D. Hackley, vice president and general manager of Kaiser Metal Products, Bristol, Pa., announced that the firm's Aircraft Division has been renamed Fleetwings Division.

ENGINEERING POSTS FILLED AT SERVEL

Dr. Carl T. Ashby, chief engineer for refrigerators and freezers at Servel, Inc., has been appointed to the same post for "all-year" air-conditioning, it was announced by T. W. Rundell, vice president in charge of operations.

Edwin C. Geishert, assistant chief engineer for room air conditioners, was named to head a separate engineering department for room air conditioners and compression-type air conditioners.

BARKMEIER HEADS RCA ESTATE; DUNN RESIGNS

Paul A. Barkmeier has been named president of RCA Estate Appliance Corp., Hamilton, Ohio, filling the vacancy resulting from the resignation of Cecil M. Dunn, it was announced by Robert A. Seidel, executive vice president, consumer products, Radio Corporation of America.

Barkmeier joined RCA in 1948, and recently served as vice president of distribution.

SIXTY-EIGHT FIRMS TO EXHIBIT AT ARI CONFERENCE IN MINNEAPOLIS

Several thousand visitors are expected to attend the ARI Educational Conference on air conditioning and commercial refrigeration, in Minneapolis, on November 18-19-20, 1954. Displays will be furnished by sixty-eight manufacturers making this one of the largest Educational Conferences to be sponsored by the Air-Conditioning and Refrigeration Institute.

Following is a list of some of the speakers who will appear on the Educational Program at Minneapolis along with their subjects:

"Sizing and Lay-Out of Refrigerant Lines" — Cecil R. Visger, past international president, RSES.

"Bulk Milk Cooling Equipment" — Leon Buehler, chief refrigerating engineer, Creamery Package Mfg. Co., and first vice president, American Society of Refrigerating Engineers.

"Reasons for Compressor Failures" — Clayton Cramer, service department, Carrier Corp.

"Oddities in Refrigeration" — Dr. W. O. Walker, dean, Division of Research and Industry, University of Miami.

"Application, Installation and Service of Room Air-Conditioners" — R. J. Thompson, director of service, O. A. Sutton Corp.

Four-page "steel kitchen section" — *sent to daily newspapers throughout the country in promotion of the first Steel Kitchen Cabinet Month in October is viewed by officers and directors of the Steel Kitchen Cabinet Manufacturers Association at quarterly meeting held recently in Cleveland. Left to right, seated, are R. A. MacNeille, St. Charles; and C. S. Motter (SKCMA president), Morton. Standing are Harry Lawrence (SKCMA vice president), Hubeny; C. D. Alderman, Youngstown; C. A. Reinbolt Jr., Tracy; C. Fred Hastings, American.*

PORTER, OF KELVINATOR, DIES

Keith W. Porter, enameling superintendent at Kelvinator Division, American Motors Corp., Grand Rapids, died September 24, it has been reported.

RCA-ESTATE COMPLETES FURNACE MODERNIZATION PROGRAM

C. D. Clawson, president, Ferro Corp., Cleveland, Ohio, has announced that Ferro has completed a furnace modernization program for the RCA Estate Appliance Corp. range plant in Hamilton, Ohio. The installation provides the corporation with modern facilities for porcelain enameling its gas and electric range products.

Clawson noted that the furnace installed for RCA contains 11 burners, and that it is of the fuel-fired, muffle "U", or hairpin type. The furnace is described as approximately 93 ft. in length with a firing zone of 49 ft.

MENZIES NAMED NEW PRESIDENT OF SERVEL

Duncan Cameron Menzies has been elected president, general manager

and a director of Servel, Inc., Evansville, Ind., succeeding W. Paul Jones, who becomes vice chairman of the board, Louis Ruthenburg, chairman, announced.

Menzies is also vice chairman of the executive committee and a director of Ball Brothers Inc., of Muncie, Ind. He was executive vice president and general manager of that company from 1950 until June of this year when his assignment was completed there.

NORGE APPOINTS MUSSELWHITE WATER HEATER SALES MANAGER

R. T. Musselwhite has been appointed water heater sales manager for Norge Div. of Borg-Warner Corp., Chicago, R. C. Connell, vice president of sales, announced.

Musselwhite joined Norge from a similar position with General Electric Co.

CRUM NAMED LYCOMING V. P. AND GENERAL SALES MANAGER

The appointment of H. Webster Crum as vice president and general sales manager of the Lycoming Div. of Avco Mfg. Corp., has been announced by S. B. Withington, division president.

Crum will be responsible for the sale of Lycoming military and indus-

trial products manufactured at plants in Stratford, Conn., and Williamsport, Pa.

NORGE ELECTS CONNELL VICE PRESIDENT OF SALES

R. C. Connell has been elected vice president of sales of the Norge Div.,

Borg-Warner Corp., Chicago, Judson S. Sayre, president, announced, confirming earlier report in October *finish*.

Connell has been director of sales since November, 1953. He joined Norge in September, 1948, as gas range sales manager and was general sales manager from 1950 to 1953.

SERVEL APPOINTS CHURCH ROOM CONDITIONER SUPT.

Carl V. Church has been appointed production superintendent of Servel's room air conditioner division, Evansville, Ind., according to T. W. Rundell, vice president in charge of operations.

Church had been plant superintendent and production manager of Mitchell Mfg. Co., Chicago.

JORDON REFRIGERATOR APPOINTS MACK

John E. Mack has been appointed sales manager of the commercial division of Jordon Refrigerator Co., Philadelphia, manufacturers of upright home freezers, room air conditioners, dehumidifiers, and commercial refrigeration, Harry Fogel, executive vice president, announced.

U. OF I. NAMES SPRIGGS

The appointment of Richard M. Spriggs as research assistant in Ceramic Engineering at the University of Illinois has been announced. He is associated with the Air Forces project, specializing in porcelain enamels.

GAS FURNACE SHIPMENTS SET FOUR-YEAR RECORD

More gas-operated home heating furnaces were shipped in August than in any other month since October, 1950, according to the Gas Appliance Mfgrs. Association.

Edward R. Martin, GAMA's director of marketing and statistics, reported that the shipment of 69,800 units during August made it the third largest month in the industry's history, topped only by September and October, 1950.

NORGE NAMES BACH, FOOSHEE TO MANUFACTURING POSTS

Norge Div., Borg-Warner Corp., has appointed W. F. Bach manager of production planning and W. N. Fooshee manager of manufacturing costs, Virgil C. Rice, vice president of manufacturing, announced.

Both positions are new. Bach will coordinate production schedules with sales department activities. Fooshee will coordinate manufacturing cost activities between plant managers and the sales and accounting departments.

ASTE CHARTERS 120TH CHAPTER IN ST. JOSEPH, MICHIGAN

The American Society of Tool Engineers has chartered its 120th chapter at Benton Harbor-St. Joseph, Michigan. This year the Society passed the 30,000-member mark.

Elmer Hopf, Covel Mfg. Co. executive, is the chairman of the new chapter. First vice chairman is Allan Ashley, and secretary is Ivan Peters, assistant master mechanic, both with Whirlpool Corp.

APPLIANCE FIRMS SPONSORING COLLEGIATE GRID SERIES

Amana Refrigeration, Inc., Amana, Iowa, The Maytag Co., Newton, Iowa, and Zenith Radio Corp., Chicago, are sponsoring the thirteen collegiate grid games televised this fall over the facilities of the American Broadcasting Co., it was announced by Robert E. Kinner, president of ABC, George C. Foerstner, executive vice president of Amana, Fred Maytag, II, president of Maytag, and E. F. McDonald, Jr., president of Zenith.

Flow coat priming

→ *from Page 44*

coating chamber, and without a drain chamber, shows a 2.5 gallon of solvent utilized per gallon of primer.

System No. 2 (moving nozzle flow coating), with no depressed flow coating chamber, but with a drain chamber, utilizes 1.6 gallons of solvent per gallon of primer. Where this No. 2 process has both a depressed flow coating chamber and a drain chamber, solvent ratio is 1.0 gallon of solvent per gallon of primer.

System No. 3 ("low pressure" flow coating), with a depressed applica-

tion chamber and a drain chamber, shows a ratio of one gallon of solvent per gallon of primer. Without depressed chamber 1.6 gallons of solvent per gallon of primer.

When considering solvent use in relation to the flow coat method of finish application it should be borne in mind that a greater amount of solvent is used in reducing the primer material for this process than is normally used for other methods of application. For example, the ratio of 1.0 gallons of solvent per gallon of primer referred to in the No. 2 system above, with depressed application chamber, represents very little solvent consumption since products of this nature oft times use 0.7 gallons of solvent per gallon of primer to reduce the primer to application viscosity at the time of charging the flow coat machine.

I would like to point out that the solvent use figures, while based on actual case histories from the field, should not be taken as the result of a scientific investigation. Such an investigation manifestly would be practically impossible. It can readily be seen that the application processes discussed greatly reduce the number of gallons, and, therefore, the number of dollars worth of finishing material used to finish a specific number of components or products. Nevertheless, you may be assured that the manufacturers of organic finishes are most anxious to continue the promotion of any such processes where it is assured that the result will be lowered finishing costs to the finished product manufacturer.

Producing stainless steel cookware

→ *from Page 47*

handle. After a final wipe and inspection, the assemblies are taken by conveyor to the packaging area.

Automatic buffing for pans

Other products of Cory's Nicro Division include stainless steel pots and pans which are given a gleaming finish with the aid of automatic buffing.

At each station, as they traverse

the merry-go-round of a rotary polisher and buffer, the stainless steel pans come under a wheel that polishes and buffs a different area. When they come off, they're gleaming and ready for spot welding of handle brackets. This setup is a special assembly of standard units. Each buffing wheel is driven by a separate 75 hp motor. Fine abrasive in stick form is fed to the cloth wheels automatically.

Cory plans to install automatic and semi-automatic polishing and buffing equipment for all stainless ware. The insides of pots and pans present more problems to economical mechanized polishing than do the outsides, but Cory engineers are confident that this problem will be overcome soon.

Highlights in the production of water heaters

(Continued from Page 27)

experienced engineer to seek out the differences — the many special techniques, the process refinements, the production machine modifications, and the rigid controls, that mark the quality line from the lines producing 'competitive' products."

Upon hearing these remarks, the author of this article decided that *finish* readers may be interested in a pictorial study of the production line presented here, not necessarily to point out the line's production efficiency (for most production lines are efficient insofar as quantity is concerned), but to point out the various operations, techniques and controls along the line.

The water heater production line at Rheem Manufacturing Company, South Gate, California, was chosen as the subject of this pictorial study, and for several good reasons. *First*, Rheem water heaters are a nationally advertised mass-marketed, high quality product. *Second*, Rheem company engineers have spared no effort or expense in tooling this line. Practically all production equipment on the line is either Rheem-designed or Rheem-modified for the specific purpose of doing one job and doing it well. *Third*, this production line produces quantity as well as quality.

Quite recently, the Rheem water heater line was chosen as the subject of a televised "Success Story" educational program to show home owners the care, precision, and work that goes into the production of home appliances.

The purpose of this photo-story is to point out the highlights in the production sequence as the water heater progresses along the production line. The continuity is not complete as various processes and techniques which are entirely conventional are omitted. None of the illustrated techniques can be interpreted as "more important" than the others. Each is contributory to overall result. It is the sum total of results that counts.

It is equally true, however, that the individual photographs with this article offer some specific suggestions for production line improvements. Many of these improvements could be worked into lines that are already

in operation, and without interference to other portions of the line. In this respect, therefore, this two-part article may be regarded as a series of "how-to-do-it" photographs, each individually applicable, either directly or inspirationally in specific production operations.

Industrial designers...

→ *from Page 58*

"breaking the color barrier." Such leading refrigerator makers as Servel and International Harvester have taken the lead in the application of color to this once-sterile unit.

The 1954 Servel refrigerator, which was styled by Reinecke and Associates, in collaboration with Donald Dailey, vice-president in charge of Servel's product planning division, features color both inside and out. The interior is resplendent with a soft blue tint and a judicious use of lustrous copper trim provides a rich, colorful appearance throughout.

Probably, the most radical deviation from the stark whiteness and color rigidness of the refrigerator of the past is the International Harvester unit which was designed by Dave Chapman in cooperation with the staff of IH's refrigeration division. This unit represents a completely new approach to the decorative treatment of kitchen accessories.

A unique door construction offers not only refreshingly crisp, architecturally tailored lines but an opportunity as well for the insertion of various panels of color and texture in a wide range of materials. The interior of this unit is sunshine yellow, adding still another note of color.

Frigidaire is offering two colors for exteriors and other major manufacturers are offering colored interiors and accessories.

These are just a few examples of the current trend toward color and how the industrial designers of today are "breaking the color barriers." Today, there is more cheer in our world than there has been in any time in our history. Colors are brighter, in more varied combinations, and they run through everything. We

are, in fact, living against a gayer background.

PEI annual meeting

→ *from Page 54*

"Yet, today", said Malcom, "you are larger and stronger than ever."

Enameling capacity today is 3½ times that of 1940.

Estimated production of enameled products is 382 million dollars compared to 130 million in 1940.

Range parts valued at 5 times the 1940 value.

Architectural usage increased approximately 24 times dollarwise.

Enamel on washing machines more than tripled.

Expansion in water heater tanks was fifteen-fold.

"Now, unlike 1950", said Malcom, "we are not faced with the loss of any major market for porcelain enamel."

In urging cooperative action, Malcom said "We must plan and carry out progressive programs in all branches of our industry. We must supply the leadership, the focal point around which we and others can rally to develop all possible new uses and new markets for porcelain enamel. We must recognize that our future is not as individuals but as part of our industry."

Banquet honors Mackasek

The traditional PEI banquet was planned to honor Edward Mackasek who has served with the Institute for 11 years and who has been connected with the industry for over 30 years.

Mackasek, now serving as managing director, has announced his retirement effective next spring.

A review of achievements and a tribute to the guest of honor were presented by P. B. McBride, Porcelain Metals Corp. of Louisville, Institute treasurer and past president.

Growth of nickel flashing—and its proper control

(Continued from Page 39)

accurate for use in plant control, but it is not as accurate as the much more time consuming chemical method using precipitation of the nickel with dimethyl glyoxime.

The rapid method is described in some detail in the paper by L. C. Ikenberry and J. J. Canfield[9]. Briefly, the nickel is dissolved from the iron with dilute nitric acid from a definite area confined by a rubber ring and removed by suction into a calibrated erlenmeyer flask. Then measured volumes of ammonium hydroxide, ammonium persulfate, and dimethyl glyoxime are added and diluted to a known volume. A few milliliters are filtered and the intensity of color is measured. The color develops from a soluble nickel compound which is not very stable. A standard nickel solution serves for calibration purposes. A quick determination of the nickel from the nickel flashing process can be made readily. All this requires only a matter of minutes and is not destructive to the ware as the test can be made on the back side of most any panel.

There are other methods of determining the amount of nickel on the metal surface that should be mentioned. J. H. Terry[10] used a spectrographic determination of the nickel on the metal surface. The metal surface is sparked and the nickel line intensities are compared with those from a standard. Robert F. Patrick[11] has recently suggested still another method for determining the amount of nickel. These methods have considerable accuracy; yet are not easily adaptable for rapid plant control.

Factors affecting control

Several factors that affect control of the nickel flashing must be mentioned. Among the more important is pH. The nickel deposition appears more rapid with a pH range of about 3.0 to 3.8. The rate of desposition diminishes on either side. Figure 4 shows some results obtained in the laboratory with varying pH. It is readily observed that the solution with a pH 6.0 is much less active than with a pH 3.0, at a temperature of 145 F.

It should be explained that curves such as these should be made in each plant for control purposes. There are variables within each plant practice, so that curves obtained from one plant may not exactly represent conditions in another.

One advantage of the use of a pH near 3.5 is that it is easier to keep the nickel flashing solution clear by filtering. In the older practice of using a pH near 6.0, the iron salts precipitated more readily and appeared more difficult to keep continually removed.

The older practice of using ammonium hydroxide to adjust pH in either nickel ammonium sulfate or nickel sulfate solutions rapidly changed the activity of the nickel, due to a complex lesser ionized nickel salt, and the pH was therefore much more difficult to control. The present practice of adjusting pH near 3.5 with sodium phydroxide or sulfuric acid does not greatly affect the activity of the nickel and it is not difficult to control the solution.

The use of a pH near 3.5 in the nickel flashing solution makes the iron precipitate less rapidly than with a higher pH. However, the need for constant filtering must be emphasized. Whenever pH adjustments are made with sodium hydroxide, some iron compounds are always precipitated. The precipitation also occurs slowly on standing and more rapidly while in use. Apparently the slow precipitation of iron salts causes the bath to become more acid, that is, change to a lower pH. In order to keep the metal surface clean for enameling, it is necessary to remove continuously the precipitated iron from the nickel flashing bath.

The continual adjustment of pH with sodium hydroxide also tends to build up sodium sulfate in the bath. Considerable increases of both ferrous sulfate and sodium sulfate in solution tend to slow down the de-

9. L. C. Ikenberry and J. J. Canfield, "Rapid Method for Determining Nickel on the Surface of Enameling Iron", Jour. Amer. Cer. Soc. 32, 308-312, 1949.

10. J. H. Terry "Spectographic Analysis of Nickel Deposited on Steel", Better Enameling 16 (1) 8-9, 1945; Cer. Abst. 24 (4) 69, 1945.

11. R. F. Patrick, "Some Applications of the Fluorescent X-ray Spectrometer in Ceramics", Jour. Amer. Cer. Soc. 35, 189-193, 1952.

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position rate of the nickel. While the iron in solution can be removed by precipitation, there is no ready means of eliminating the sodium sulfate. Even with a continuous filter to remove iron, it becomes necessary to dump the solution eventually.

A second important control factor is temperature. Figure 4 shows an effect of temperature. Also, Figure 5 shows the effect of temperature with a constant time. The deposition of nickel increases rapidly with temperatures above about 150 F. Below this temperature, the rate is quite slow.

Another important factor is the metal itself. Nickel deposits more readily on some metal sheets than others. Apparently the degree of roughness of surface has an effect. A still greater effect is from stresses in the metal. Heavily cold worked metal is coated more readily with nickel than well annealed iron. For this reason it is impossisble to control the nickel at the same level on all parts of deeply drawn articles. In general, the metal which appears to pickle faster will nickel flash faster and, if left in the nickel solution for a long time, will end up with a higher level of nickel.

A fourth factor is concentration. Most plants now use near 1 oz. single nickel salts/gallon and there seems to be little advantage in using more. With less than 1 oz./gallon the rate of deposition is slowed. The concentration does not appear to be as effective on nickel deposition as either pH or temperature.

Still another factor is agitation. The amount of nickel deposited depends importantly on the degree of agitation. The agitation tends to increase the rate of nickel deposition by insuring continual contact of the metal with the more concentrated solution.

The effect of scratches must not be overlooked. The nickel deposition tends to concentrate on the top edge of scratches and to produce a line of bubbles in the enamel. Scratches that can be readily felt by the fingers should be polished. Here it might be considered that metal finishing would change the nickel deposition. Laboratory tests show that it does.

Essentially the same problems in nickel flashing occur with automatic pickling systems as occur with batch pickling. The fixed time of treatment in the automatic systems make it necessary to control the nickel deposition by changes such as in temperature and concentration.

Suggestions for rework ware

Sometimes it is necessary to repickle and rework ware which has been nickel flashed. Boiling of the enamel may develop on this retreated ware. The apparent cause for this boiling is that the acid pickling tends to dissolve the iron from underneath the nickel film and loosen it. If the pickling is stopped before the film is cut away, then the surface cannot be rinsed free of salts and gas forms during firing of the enamel. The ware should be either pickled for an exceedingly short period or for a time long enough to remove all the nickel film. Ceasing of violent foaming in the acid is an indication of sufficient pickling. The ware then can be renickel flashed, and in the same immersion time, will probably take on a greater amount of nickel than before because the metal has been roughened.

Mention should be made here of

methods of applying a thin film of nickel to the metal surface other than by electrochemical deposition. A patent to Ferro Corporation by B. J. Sweo[12] describes a chemical reduction method. In this process the nickel is chemically reduced by hypophosphite and deposits on the iron. There is essentially no solution of the iron as occurs with the usual electrochemical displacement in a nickel flashing solution. The process has not yet been widely practiced. It may someday find general use for single white enamels applied directly on the metal with a single fire.

The chemical reduction method just described is based partly on the work of Abner Brenner and Grace E. Riddell [13], [14]. They found a control for the recreation $NiCl_2 + NaH_2PO_2 + H_2O \rightarrow Ni + 2HCl + NaH_2PO_3$. The deposit was found to contain about 97% nickel. The metallic nickel catalyses the reaction after the first bit of nickel is deposited and therefore this autocatalytic action increases the rate of deposition rather rapidly. They [15], [16] found also a similar control for the deposition of cobalt by chemical reduction from an alkaline solution. The process is called "electroless nickel plating" and "electroless cobalt plating".

Nickel has also been applied on metal surfaces by the heating of nickel carbonyl gas. Whether this or the other processes will find use in the enameling industry to form nickel films on enameling iron remains for the future. At least considerable more knowledge about them will be necessary before they are used. It is not improbable that further improvements in nickel flashing will be found. Even other adherence methods may develop and replace the present nickel flashing method. Until this happens, the nickel flashing will remain standard procedure in conventional enameling practice because it increases adherence and is readily controlled.

12. U. S. Patent 2,581,310 1/1/52 to Ferro Corp. by B. J. Sweo.
13. Abner Brenner and Grace E. Riddell, "Nickel Plating on Steel by Chemical Reduction", Jour. of Res. (Nat'l. Bur. Sts) 37, 31-34, 1946.
14. U. S. Patent 2,532,283, A. Brenner and Grace E. Riddell.
15. Abner Brenner and Grace E. Riddell, "Disposition of Nickel and Cobalt by chemical reduction", Jour. of Res. (Nat'l. Bur. Stds.) 39, 385-395, 1947.
16. U. S. Patent 2,532,284. Abner Brenner and Grace E. Riddell.

Automatic milk vendor *— was introduced by Shaner Equipment Co., of LaGrange, Ill., at the 1955 convention and exhibit of the National Automatic Merchandising Association held in mid-October in Washington, D.C. The unit can dispense 150 cartons or bottles in ½ pint to ½ gallon sizes. The coin mechanism can be set to accept pennies for complete pricing flexibility.*

WHIRLPOOL'S GELDHOF RETIRES

Retirement of P. Eduard Geldhof as engineering vice president of Whirlpool Corp., St. Joseph, Mich., was announced by Elisha Gray, president. Geldhof will continue as a director and special consultant.

Geldhof, 65, has spent his entire career in designing and engineering laundry equipment and appliances, and holds over 100 patents on both domestic and commercial laundry appliances.

HOLBERSON NAMED V. P. OF YOUNGSTOWN METAL PRODUCTS

Henry A. Holberson has been elected vice president and general manager of Youngstown Metal Products Co., a subsidiary of The Youngstown Sheet and Tube Co., Youngstown, Ohio. He succeeds David W. Thomas who died August 24.

BENJAMIN ELECTRIC PROMOTES EIGHT KEY EXECUTIVES

Benjamin Electric Mfg. Co., Des Plaines, Ill., has promoted eight of its executives to new posts.

They include: George F. Niemann, works manager; Alva H. Meyer, manager of manufacturing engineering; Carle E. Rackley, chief engineer; Clement P. Mors, general superintendent; Henry A. Flentge, production manager; Erick H. Church, manager of industrial engineering; Raleigh I. Klipstein, plant engineer; and James R. Chambers, sales promotion and advertising manager.

RYAN UPS HUBBELL, COCKRELL AND HULL

Wilson G. Hubbell, former chief metallurgist, Ryan Aeronautical Co., San Diego, has been advanced to head the engineering material and processes laboratory. William S. Cockrell, former chief of the laboratory, has been appointed chief of test facilities and engineering shop, and Larry J. Hull, former research engineer in the laboratory, is the new chief metallurgist.

AVCO PROMOTES GRAHAM, LAWRENCE AND MIHALIC

Promotions for three top executives in the Crosley and Bendix Home Appliance Divisions of the Avco Mfg. Corp. were announced by the company's Cincinnati, Ohio, offices.

W. H. Graham becomes general manager of radio and television manufacturing; W. R. Lawrence, Jr., was named general manager of the Nashville (Tenn.) plant, and J. M. Mihalic, Jr., was appointed to the same post at the Crosley plant in Richmond, Ind., announced Parker H. Ericksen, executive vice president.

LOVELEY TO NEW AIRTEMP POST

Appointment of Joseph D. Loveley to the new post of vice president — engineering of Airtemp Div. of Chrysler Corp., Dayton, has been announced by C. E. Bucholzer, Airtemp president.

NICOL TO ALTORFER BROS.

It is reported that William D. Nicol, formerly enameling superintendent at Crown Stove Works, Chicago, has taken a similar position at Altorfer Bros. Co., Peoria.

WORTHINGTON NAMES MADDOCK DECATUR WORKS MANAGER

Edward R. Maddock has been named works manager of Worthington Corp.'s new Decatur, Ala., works, it was announced by L. C. Ricketts, vice president — manufacturing.

PHOSPHATIZING AIDS IN FINISHING SHORT-WAVE SET

Stratton & Co. Ltd., Birmingham, England, now phosphatizes aluminum die castings which form the front of the Eddystone short-wave receiver, as well as the steel housing. Granodine, a zinc phosphate coating, is said to provide for "perfect paint adhesion on the parts."

One large communications receiver of this type is made especially for International Marine Radio Co., and is of the type installed in the liner Queen Mary.

NEWS ABOUT SUPPLIERS


RAYMOND MURRAY


DAVID GOLD


JOHN SULLIVAN


JOHN WINGET

PRESSED STEEL CAR BUYS CLEARING MACHINE

Pressed Steel Car Corp. has announced its expansion into the machine tool industry with the purchase of Clearing Machine Corp., Chicago, for about $9,850,000.

BETZ NAMES GOLD, MURRAY

Betz Corporation, Hammond, Ind., has announced the appointment of David H. Gold as chief engineer, and Raymond J. Murray to its management staff. Gold was formerly with Aerofin, and Murray was with Cooler-ator.

SULLIVAN HEADS T & K

R. A. Weaver, chairman, Ferro Corporation, has announced the election of John A. Sullivan as president of Tuttle & Kift, Inc., a Chicago subsidiary, to succeed C. D. Clawson, who will now devote his full time to his regular duties as president of Ferro.

Sullivan was national manager of small appliances for Westinghouse before the war. Recently he had been director of home appliance marketing for General Mills.

HOLZBERGER, OF HOMMEL, DIES

Glen Holzberger, midwest representative for The O. Hommel Co. for the past five years, died September 29, following a brief illness.

JANECKE JOINS CHICAGO VIT

Joseph F. Janecke has joined the sales and service staff of Chicago Vitreous Corp., Cicero, Ill., according to an announcement by W. Hogenson, president. Janecke has been associated with the porcelain enamel industry since 1927.

HANGOSKY TO SCHOENBERGER

Frank E. Hangosky, formerly with Roberts Brass, has joined the sales staff of the W. J. Schoenberger Co., Cleveland, according to C. S. Stuckenholt, president.

MAHON EXPANDS FACILITIES

R. C. Mahon Co. has completed another expansion program, adding some 130,000 sq. ft. of factory space. The firm's modern plant, all constructed since 1942, now has 1,300,000 sq. ft. of manufacturing, fabricating and storage space.

ROE JOINS DETROIT BRASS

B. T. Roe, has been elected vice president of Detroit Brass & Malleable Co. He was formerly with Tracy Kitchens Div. of Edgewater Steel Co.

FAHRALLOY V. P. RESIGNS

A. Rasmussen has resigned as vice president and plant manager of The Fahralloy Co., Harvey, Ill. He joined the firm 12 years ago.

ARMCO PROMOTES WINGET, SLOAN

Two executive promotions in the market development division of Armco Steel Corp. have been announced by R. A. Dadisman, division manager.

John C. Winget has been named manager of Armco's marketing service department. Raymond G. Sloan will succeed Winget as manager of the development engineering department.

GLIDDEN DEDICATES NEW PLANT IN CANADA

A new Glidden paint and varnish plant, the first of three planned additions in the Province of Quebec, was dedicated at Villa LaSalle, a Montreal suburb, by Dwight P. Joyce, president of The Glidden Co.

***Robertshaw-Fulton research center** — at Irwin, Pa. — was formally opened on September 23. Dedicating the new $1,000,000 research center, where new control devices will be developed, John A. Robertshaw, president, said "progress in home-living, industry, transportation and in better weapons to protect our country, is largely dependent upon the development of modern control devices." The new research center forms a major link in the firm's expansion program which includes new plants under construction in Long Beach, Calif., and Milford, Conn., a new plant in Toronto, Ontario, and a special military research laboratory at Anaheim, Calif.*

SMITH HEADS DRAKE SALES

Drake Mfg. Co., Chicago, manufacturers of socket and jewel light assemblies, has confirmed the appointment of Verne E. Smith as director of sales, as reported earlier in September *finish*.

ARMCO NAMES MALCOM TO HEAD EXPANSION IN PREFAB. BLDG. FIELD

Armco Drainage & Metal Products, Inc., Middletown, Ohio, a subsidiary of Armco Steel Corp., has announced expansion of its activities in the field of prefabricated steel buildings. First step will be the organization of a steel building dept., according to S. R. Ives, president.

Named to head this department is D. H. Malcom, former manager of marketing service dept. Robert Blickensderfer will coordinate the technical phases of the program. A. H. Baldwin has been appointed assistant to the manager.

SCHMIDT HEADS SALES FOR BENJAMIN CRYSTEEL DIV.

Hoyt P. Steele, president, has announced the appointment of John C. Schmidt as general sales manager of Benjamin Electric's Crysteel Div., Des Plaines, Ill., producer of porcelain enameled washing machine tubs and other porcelain enameled products.

VERNE SMITH

DON MALCOM

Schmidt succeeds J. W. Fall, who retired after serving over 23 years in executive capacities.

Vacuum cleaner manufacturers hold fall meeting

pay tribute to the late H. W. Hoover — last survivor of association founders

THE Vacuum Cleaner Manufacturers Association held its annual fall meeting late in September at The Homestead, Hot Springs, Va., and, as usual, the fall meeting was devoted mostly to a social get-together.

In a brief business session, tribute was paid to Herbert W. Hoover, late chairman of the board of The Hoover Company, who had died only a few days before. He was the last survivor of 16 industry executives who formed the organization in 1913.

With their wives, top executives of the member companies held a special meeting at The Homestead in 1938 to mark the Association's twenty-fifth anniversary. When they held a similar meeting there ten years later to mark the thirty-fifth milestone in the industry's history, they agreed to make the social gathering a yearly event.

C. G. Frantz, president, Apex Electrical Manufacturing Co., Cleveland, is head of VCMA, and Richard J. Simmons, vice president, Birtman Electric Co., Chicago, is life chairman of the Association's Homestead program committee.

A chuck-wagon supper was a feature of the Vacuum Cleaner Manufacturers Association's annual fall meeting, for which the industrialists and their wives turned out as shown in photograph.